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mainframes

NEWS IN BRIEF

ICL to expand in Europe?

SEEKING to expand and consolidate its position in Europe, particularly the EEC countries, ICL is making a detailed study of the major markets with a view to possible acquisition of or col-laboration with Europeanowned companies.

"There are no deals in pro-gress at the moment," a spokesman told Computer Weekly. "but we are always interested in acquisitions which might further our business, and we want to strengthen our base in

Banking on 2903s

TWO more banks have ordered ICL 2903s. The New York office of the Banco Totta e Acores of Portugal is to follow the lead of the London office and install a £60,000 2903 when it opens later this year, and the French Credit Industrial et Commercial is to have a 2903 in its London office. It will use an international banking package developed by Arthur Anderson & Co.

86800 for OUP

THE largest book publisher in the UK outside government, the UK outside government, the Oxford University Press, is to acquire a Burroughs B6800 for online working, to replace its ICL 1902T, There will be over 60 terminals in London; Oxford and Glasgow, and the machine will be used for stock and financial control, and also for preparation of the actual text of books.

Faymaster: switch

TWO ICL 2900 machines, ordered in 1975 to replace two system 4/50s (CW, October 20, 1978), are now installed at the Paymaster General's Office at Crawley, Sussex

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'Doctors opposition based on ignorance'—Samet

DOCTORS' opposition to computerized medical records systems was based on emotion and ignorance, said BCS president Professor Paul Samet in a letter to the British

He was commenting on the discussion He was commenting on the discussion about computers and confidentiality at the BMA's recent meeting at Cardiff (CW, July 20) at which 16 motions proposing non-cooperation with computers in various ways,

Decrease and they were worried that if policies records were stored on computers, confidentiality would be lost. In particular, the doctors objected to the DHSS's proposed Child Health system (CW, May 4).
According to Sames, doctors did not under-

stand a word about security of records. They should realise there were many other types of sensitive records that needed careful handling.

Ex-IBM man

in ITT rejig

N a reshuffle of executives a

IN a reshuffle of executives at ITT-Jim Foord (above) has been named director and general maned director and general maned of the ITT Business. Systems Group (UK). He takes over from Dennis Kennedy who has been appointed group director for voice communications with ITT in Brussels, Kennedy was also managing director of ITT Creed at Brighton and that post goes to John Freer, formerly general manager of the company.

company.

Foord: 44, Joined IBM in 1960 and later moved to Rolls.
Royce, one of the major IBM uters in the UK. He then had a public at Honeywell before loining forcer Data Products as managing director. Before joining it? as general manage of the Data Systems Division, he was managing director of Adabas, Ltd.

"The suggestion that handwritten docu ments stored in an open folder in a filing cabinet are secure is absurd," Samet said. He added that the only security factor they had was the doctors' illegible handwriting. Computers could provide much better security, he pointed out, by providing extra features such as limited access to certain fields of records to rtain people who are excluded from seeing

Efforts to prevent the combination of records from several different sources were hardly valid for medical records. The potential of computers to help anticipate and prevent epidemics, tragedles such as that of Thalldomide, would be lost, he added.

naire published in the latest issue of the BMA News Review was described by dangers".

Samet as "daft". It was headed, "BMA News Review is seeking the help of all its readers in gathering evidence to support the growing threat to confidentiality of computers." It asked such questions as "Should doctors be the persons to safeguard the confidentiality of their patients" recorde? Are you concerned

that, without specific safguirds, computerised records may endanger this confidentiality? In view of the increasing use of computers by Government departments, should the Secretary of State continue to have legal ownership

Samet commented that the questions told what answers to put. He quoted a headline in the British Medical Journal. "Doctors warn computercrats of ethical dangers". There should be another story, he said, headed "Computercrats warn BMS of medical

Brunel University student Hazel

Bennett at NPL last year, when a

Termiflex hand terminal with a

two-line LED display was linked

to the lab's Digital Equipment

PDP-11 and a simulation pro-

shifts, operation of the terminal

was less than fluid, but it proved

that useful information could be

provided on a restricted display.

French vocabulary program has been loaded on to the EPROMs

together with an automatic, albeit limited, English/French

dictionary. However, as Chris Goss, the consultant and soft-

ware designer who built the

prototype says, the potential for

creasing Muppet's capabilities

"There would be no problems

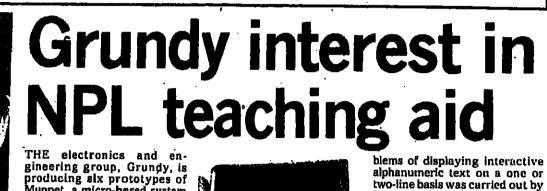
in expanding Muppet's size to something like 8K or 10K right away," he said, "and with bubble

memory we could extend this still further."

On the prototype model, a

With just 20 keys and three

gram designed.



producing six prototypes of Muppet, a micro-based system leveloped at the National developed at the National Physical Laboratory, Teddington. It is claimed to be the "first hand-held teaching computer."

Grundy, which has a minority. nterest in Data Recording instruments, the computer peripheral manufacturers, has also said that it is interested in the commercial production of the device. An interactive system that can be used for such applications as language tutoring, it is one of a number of important developments of the NPL team, headed by Dr Christopher Evans, psychologist and computer scientist. These include the Mickie Hospital patient interviewing system (CW, February 17) and Mayis, the micro-based aid for the severely handicapped (CW, first hand-held teaching com-September 15, 1977).

Commenting on the future divided equally between propotential for "personal tutors" gram and data storage potential for "personal tutors" gram and data storage.
like Muppet, Dr Evans said that the next decade could see such idea for the teaching computer

"There is no way the world Muppet. This shows the can afford to give every human tremendous speed at which you can work with this technology."

The NPL team was multitraining teachers is expensive and once qualified, they have to time share their talents among hundreds of students. I believe that in the carly 1980s, there will be an immense number of Muppet-like systems in use supporting teachers."

The NPL team was multiplication of substitution of systems in the control of the number of problems of presenting alphanumeric information on an one-line display and designing and disciplinary, drawing its expensive disciplinary, drawing its expensive disciplinary, drawing its expensive and once it in the number of periance from computers, was this, feels Dr. Evans, that enabled them to get around the problems of presenting alphanumeric information on an one-line disciplinary, drawing its expensive periance from computers. If

porting teachers."

Muppet consists of a pocket, keyboard that is readily usable line stylenome. line alphanumeric display. This: The keyboard has been has 10 digits and can handle all arranged so that the vowels fall.



demand for them that unit costs said: "It took less than a year could approach £10." said: "It took less than a year and under £1,000 to develop.

has 10 digits and can handle all airanged so that the vowels fall 26 letters of the alphabet and across the top five keys a numerals from the 8- in addition to these there are four chers of Longhborough University functions on the keyboard and a design that has brought space Go, which acts as a "new some encoughing results line" key Delete: and hyphen:

Based on an intel 8085 micros simple to perata in and Disprocessor, Muppet now has 286 Evans. Paople can begin typing bytes of RAM and 4K of intresponses in seconds!

BEROM: the EPROM being Basic research into the pro-



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PO dispute THE Post Office Engineering Union's action in support of 35-hour week has disrupted data communications links with the London office of Continental Illinois, a Chicago-based bank ing group. The links connect terminals in

> DEC computers in Chicago via multiplexer and modem equipment in Brussels. The bank's new offices had only five lines to single telephones. After an initial delay, the private exchange was connected by Post Office management, and the union blacked the firm, A spokesman

for the union said that it would

the London office to IBM and

The you've got

and

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SOFTWARE

stay blacked until the dispute was resolved. Lord McCarthy has now concluded his series of meetings with the Post Office and the Post Office Engineering Union, and will present his report to industry Minister Eric Variey st the end of this week. So far about 150 engthans have been sent hom for refusing

to install equipment. Atkinson for DOI

DIRECTOR of the Central Computer Agency, Reay Atkinson, is to be transferred to the Department of Industry in September. He will be replaced at the CCA by Gerald Watson, who at present runs the agency's Policy Planning and Financial Division, Details of Atkinson's new job at the Dol have not ye

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Pinted of the Bellam & C.B. Limited Sheepen Place Sheepen Place Sheepend their operation of the Sheepend their operations of the She

in colourful computer computer stationerv

US bank Briefing blacked in Fairchild and

> GEC join up A JOINT company to make to be set up by GEC and Fairchild. This has been agreed in principle and full details are expected to be announced next

The new company will have a UK manufacturing base, while product development will be carried out in the US. Fairchild makes a wide range of semicon-ductor devices, but the new company is likely to concentrate on memories and microprocessors. The main Fairchild devices in the micro market are the 3870 8-bit and the 9440 16-bit units. The latter is still the subject of a lawsuit by Data General (CW, September 15, 1977).

Impact on Europe

THE director general of the Computing Services Associa-tion, Alan Benjamin, is to talk to an all-party group of the European Parliament later this year on the needs of the industry and the impact of information technology in general.

Colossus launon

THE new 32-bit mini line due noxt month from Perkin-Elmer's Interdata division, exclusively revealed in Computer Weekly (May 25), is expected to be built around a 40 Megabyte bus and may have a second a around a 40 Megabyte bus and may have a virtual storage South African police decide on operating system. Code-named operating system. Code-named Colossus, the new machine will use discs from Perkin-Elmer's We also division and displays and printers from the Terminals

Research shift

RESEARCH spending by the department of Industry is shifting slowly from aircraft and space to computer, electronics and engineering, according to the Department's annual R&D Report. Though the largest slice of the £125 million in 1977-78 7 million estimated for 1978-70) still goes to space technology, computers and electronics accounted for £8.9 million in 1977-78, and will take £12,4 milllon next, year,

Joint venture?

Antional Physical aboratory is considering collaboratory is considering collaboratory with Logica, GEC, Ferment or Plessey for a new version of its pioneering packet-wiched network. Full report, 1986 ii.

ine news synopsis on the font page of Computer Weekly as week. August 3, there was a disconce to Wordplex, the word incessing equipment manufacture. We unreservedly with law the statement. "The initial Development Corp has which to the resule of the foundation of the resule of the foundation and application."

The statement is the statement is allowed the the statement is allowed to the wordplex. Wordplex.

Number 613

IBM groups may oust plug-compatible users

Thursday, August 10, 1978

Teamco, could be one of the first users of an IBM plug-compatible CPU in Europe to get the cold shoulder from IBM user groups. Teamco has replaced its IBM

Next president of the BCS

The next president of the British Computer Society is to be Frank Sumner (left) professor of computer science at Manchester University and currently SCS deputy president. This was confirmed at a recent meeting of the Society's council; the deputy president recent meeting of the Society's council; the deputy president inght) a former treasurer of the Society, was appointed the new deputy president. Both will take office at the annual meeting on October 13, for one year.

tender, the South African police force is reported to have decided to replace its existing ICL computer with a 2900. The new partment of Bantu Administra-partment of Bantu Administra-

computer is said to be intended tion (CW, September 13, 1973).

South Africa's pass laws, which Africa apart from IBM are regulate the movement and reported to have bid for the

THE London-based bureau, told Computer Weekly that membership of Guide would definitely not remain open to users that replace IBM processors with plug-compatible machines. "Allowing users that do not 370/155 with an Itel AS/5 and have an IBM processor to stay in Guide would affect our relationconcerned with large users, and ship with IBM." However, he the IBM Computer Users added, "We would only allow Association, asking if it can still membership to be retained in be a member of these groups.

UK correspondent of Guide,
Barry Aldred, of Southern Gas,
efit to Guide."

special cases such as where a
particular user is a positive benefit to Guide." special cases such as where a

as a special case because its parent company in Norway runs an IBM 370/158 and could sponsor its UK subsidiary. Another Itel user, Unilever Computer Services Ltd, which

has three Itel AS/5s, two installed and one coming, told Computer Weekly that it would continue to qualify for Guide because it still had an IBM 360/65 and whether or not it remained in Guide could affect its choice of a

CUA and that to exclude users of IBM compatible kit could be seen as unreasonable. The position of plug-

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customers, is eligible to join the

compatible users in the 4th The IBM Computer Users leading European IBM 81 . 6 Association will probably dis-Seas, is also uncertain, although cuss Teamco at its council hs US equivalent, Share, ve 194 meeting on September 12. One last year to exclude non- ! M leading member of the association said that it could be a heated understood to have been experdebate because any user of an

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itel users in the UK, about 10 at the moment, are setting up their own user group. This, it is claimed, will be more independent of Itel than Guide and

EEC initiates software study

MAJOR studies in the field of software portability, including proposals for a standard European systems implementation language, are to be initiated by the EEC by the end of October. The three studies, for which invitations to tender were issued early in July, also include an examination of the feasibility of a common software interface for minicomputers, and an investigation of the need for new software The ESL may be an existing

language, according to the

conversion tools. The projected European Sys-tems Language, ESL, is intended as a portable tool for implementing software at a level between that of applications programs and the operating system. Specific applications identified by the Commission include the construction of management information systems, database management systems, and in-

US government imposed restrictions on sales of US com-

any US manufacturer from

completing the order if it had won the contract.

Puzzier Software File

Op Spot

Miliona neive TUC to debate miloros Leffers to the Editor People in the news

ry dates

mër Notes

8/7

puter operating systems. AFTER going out to open the Republic. The only ICL However, earlier this year, the

★ Turn to page 16

language, a development of an existing language, or a new

Described as preparing ground for future standardisation, the study of the feasibility of a common software interface is targeted at defining a common set of functions for minicom-By identifying basic common

functions, such as scheduling, supervisory, and monitoring unctions, as well as higher level functions, such as communica-tions handling, it may be pos-sible to establish a common function set and subsequently a common software interface.

Such a standard interface would be an ideal basis for a puters to the South African de-fence and police forces (CW, March 16), effectively parring standard job control language,

standard A FURTHER step in standardisation of real time defence computing is understood to be under consideration by the Ministry of Defence. If implemented, it would require all future applications to use a soft-

ware system called Mascot, originally developed at the Royal Signals and Radar Establish-Until now, contractors have

been directed to consider the use of Mascot but have not been

Turn to page 15

Micro Logic is Data Logic's microprocessor division. They apply microtechnology to real situations. They advise, design and assemble. Almost certainly, if anything can be done with micros they can do it.

contain a processor and store, a floppy disc drive, a visual display unit with keyboard, and a printer. Why so special? than 20 lbs and to fit into a container no bigger than a

computing. But they demand a whole new way of thinking.

through it expects to continue selling Quantor systems in would provide the base for exchange in the agreement signed between the two companies. pansion by NCR in the micro-COMPUTER WEEKLY'S INSIDE NEWS New storage method Gim's Mythodology

ICL 2900 to administer pass laws

All companies active in South

ONLY two weeks after the announcement that Agfa-Gevaert was taking over the marketing of Quantor computer output microfilm recorders in Europe from NCR (CW, July 27), NCR in cash. The acquisition is subfrom NCR (CW, July 27), NCR in the deal goes

NCR and Quantor have graphics and related fields. Quantor, based at Mountain View, California, turned over acquire Quantor for \$7.5 million in cash. The acquisition is subfrom NCR (CW, July 27), NCR in the boards of both companies. A spokesman for Agfa-acquiring Quantor NCR in the boards of both companies. Chairman of NCR, William

NCR and Quantor have graphics and related fields. Quantor, based at Mountain Quantor, based at Mountain view, California, turned over acquire Quantor for \$7.5 million months; ended April 30, of its deciration for the companies. A spokesman for Agfa-Chairman of NCR, William office said that he had not been acquired that the had not been acquired t

Chairman of NCR, William

NCR COM expansion with Quantor takeover

If the Tories win the next election the support schemes for micro menufacture with £100 million of investment by the industry Department, will be maintained. But a very different approach to involvement in industry would be initiated. So says Sir Kaith Joseph in an exclusive interview with Martin Bonks.

UK says that if the deal goes

for use in part to administer

employment of Africans within contract.

MANAGEMENT KNOW-

Full membership of the BCS should full membership of the BCS should indicate proven management shifty is order to make it an attractive qualification. This is one of the points in a coll for a change in the prairie attracture of the society.

TORY WAY WITH MICROS OPS' CAREER PATHS The career path for most operators is short and the rungs neer the top of the ladder are quickly readiled. That's where the frustration can set. in; waiting to move into the top, positions. Op Spot suggests how realistic career paths could be con-

> ALSO.... Computerview on

Focus on the DIY DPM

Computative final line-up BCS change of grading call Downtine by Chad Towards a better Fortren

NPL new network plants Malitet explosion in praphida ICE skares peak Computeratyle 2000 essay Chessiab The Bojes Bit The Hex Kid Thinves of BCS headquarters

APPOINTMENTS: Pages 17-39

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Professionalism should mean better systems

a spectrum of activities from prostitution to the highest realms of intellectual life. In the computer world, it is a term which has defied meaningful definition yet one which provides a focal point for much dis-

The latest contribution to trying to come to grips with this jellyfish of an Issue is from Roger Griffiths, whose proposal to the BCS professional panel for changing the grading structure is the latest attempt to put practical teeth into theoreti-cal debate (see page 3). The poles in the debate have always been clearly defined.

On the one hand there is the argument that computer tech-nology is a complex and important science, with an impact on most aspects of personal, social and business life. As such, there is a need for those involved in the development and use of the technology to meet to discuss relevant issues and to provide channels for formulating collective proposals, say on data pro-tection legislation or the latest Fortran standards (see page 4).

In order to define some level of ethical and technical competence to give weight to such collective meetings, it becomes necessary, it is said, to set

events of the year so far has been the attention paid to personal computing. Computer Weekly set the scene in February with MicroSystems 78 seminar and exhibition.

The micro chips have been zapping ever since.
Many DPMs have long be-

lleved that computing is a personal affair, with relationships

Although thinking small is not the most hoted working mode of the computer installation, most DPMs have in fact been getting it together since the day the thinking the state of the day the state of the day the state of the sta

equipment was installed. They have long believed that the

operations manual should in-clude handy DIY tips, covering such activities as faulty read/

write heads, blown fuses, squeaky tape drives and protection switch recovery proced-

The company managing

believed that the system is based on DIY principles, especially since the day he was sllowed to power-up and press the GO but ton. The remainder of the or

FOCUS

tion for the "computer professional," with "professional" in this context aspiring to be a halimark of technical and intellectual quality, bringing com-puting into line with other

The other side of the argument is that thousands already earn their living from computer work although they have, desire 'and need no further qualifications other than their work ex-

In addition, it is clear that non-computer specialists can develop and use computers more easily than, say, a computer person can pick up the skills of a brain surgeon. There is no need to create standards for computer professionals, the argument goes, because there is no such thing as a computer

Griffiths is nobly trying to bridge the gap by suggesting that there should be BCS grades distinguishing between the technician, who builds systems, and the professional, who has wider responsibility for the development and use of the sys-

Yet his case still contains an inner contradiction, best encapsulated by the phrase he uses to help describe a computer "professional" who, he says, "has the responsibility for seeing that it time, according to specification and within budget and without waste. In addition he ensures . . the eventual user will be satisfied with the product . . .

If members of the BCS had to satisfy this criterion, based on practical experience, the society would have a very small membership. And if such a criterion staff shortage in the computer business would be insoluble.

It is right that the BCS, the IDPM and other representative bodies continue to strive for improved standards from their members, particularly where those standards relate to practical as well as theoretical computing. In this light, the Griffiths proposals should be

But while the debate over 'professionalism" is interesting. it is far more important for these bodies to attack the technical and management issues relating particularly to software deveopments which have done so much to bring the image of the computer and computer people into disrepute among those users who have suffered from the poor implementations of

In the public's mind, the computer "professional" is closer to that of the overpriced whore

THE line-up for the final of the Computastars contest is now complete and an international flavour has been added by two teams from the DP department of SAS, the Scandinavian airline. They are taking part by special invitation and will be flying in the agent which will be on Sheffield: 5 Hambros: 6. Water 6. for the event, which will be on Saturday, September 30, at the Crystal Palace sports centre.

Over 200 computer people will be taking part in the track and field events and although some may not be of the type seen at the Olympics, they should pro-vide plenty of competition for the finalists and entertainment for the spectators. The contests and races plan-

ned are listed below but it may be necessary to vary the programme on the day. However, all teams taking part will compete in all events. The order of events will not be released until

MEN: 200 metres, 400 metres urdles, 800 metres steeplechase, football penalties, football target kicking, Rugby football drop kicks, shot put, discus, javelin, sit-ups, press-ups, dips, frisbee throwing, hop, step and jump, sack race. WOMEN: 80 metres hurdles, 200

metres, 600 metres steeplechase, etball shooting, hockey ball hitting. iong jump, shot put, discus, javelin, sit-ups, step ups, dips, frisbee throwing, football penalties, sack

Group 1: 1 Peterborough Data rocessing; 2 Rowntree Mackintosh l; 3 London Borough of Kensington and Chelsea; 4 Clerical Medical and General; 5 MANWEB: 6 Midland Bank London. Group 2: I Rank Or-ganisation, Plymouth; 2 Allied Sup-support of Computer Weekly.

Sheffield: 5 Hambros: 6 Water Gal Group 6: 1 Midland Bank Book: Commercial Union: 3 Diverser, Rank Organisation Whyteld: Scicon: 6 Provident Managery WOMEN

Group 1: 1 Burmah Oil; 2 We Group 1: 1 Burman Oil; 2 Wall-worth; 3 Commercial Union; 4 will and Revenue; 5 Provident Management Services; 6 SAS, Group; Allied Suppliers; 2 Peterboto; Data Processing; 3 Littlewood; Midland Bank, London; 5 Bata Industrial Plastics; 6 London Tusport I. Group 3: 1 Rank Organistion, Whyteleaf; 2 Foster Whele! Midland Bank, Sheffield; 4 Py master General; 5 London Trasson II; 6 British Relay, Group 6 Mid-WEB; 2 CASE; 3 Scicon; 4 Rel Xerox; 5 City University 8 London Trasson Borough of Kensington and Colons. Borough of Kensington and Chelea

Tickets for Crystal Palacecan now be booked. They cost the for adults and 20p for children under 14. Each ticket ensurers numbered seat under cover h the main stand and provide access to refreshment and bar facilities. Complete the booking form below and send it with i stamped, self-addressed envelope to: Computastars, John Goldsmith (Computer Recruitment) Ltd, 15 Buckingham Palace Road, London, SWI.

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INTERRUPT

A SMALL British company specialising in the production of one-off printer controllers for esoteric use delivered a printer to a highly confidential place not ,000 miles north of Geneva. The designer went over to install the machine personally. It did not take long to get it wired in and working, but then a very annoying fault developed.
Apparently at random, in any

Apparently at random, in any willings character, would fall to print. The designer changed lust about everything in the unit but still the fault persisted. During the night he drew up a huge table of missing characters with column and line numbers but could find no consistent pattern despite fautagic efforts. pattern despite fantestic efforts at mathematical analysis.

At 8.30 in the morning the

At 8.30 in the morning the staff of the installation sterted to arrive just as our unahaven hero was ready to sob into the printer. Trying fo hide his face from the oright-eyed international experts he looked down at the unit and at that moment saw it mare was a digarette burn hole light through the typewriter type ribbed!

Moral if you find you have missed a very simple fault write the most complicated possible reportion the diagnostic procedure used to find altother fault.

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Computastars—the Call for change of final line-up THE line-up for the final of the Computastars contest is now complete and an international flavour has been added by two The would make BCS mem. the data processing industry. The would make BCS mem. the data processing industry.

British Computer Society should be completely changed, to give membership more significance and status, according to Roger Griffiths, managing director of Duncan Bransom consultants, who is on both the BCS Council and its Professional Panel.

Full membership, Griffiths says, should be an indication of proven ability to handle managerial responsibility, as in

bership an attractive qualification for prospective employers to look for, Griffiths asserts, and would encourage more to join the Society.

particularly managers, are not

He distinguishes between two

types of workers. First, there is

he "technician", who is con-

cerned only with technical

standards of performance, quality, and safety. Then there is the "professional", who has res-ponsibility for seeing that a pro-

ect is completed on time.

according to specification

within budget, and without

vaste. He also makes sure that

the technician's work is satis-

factory, that the user is satisfied.

and that ethical standards are

of responsibility.

Griffiths makes these proposals in a paper to be published shortly in the Society's Computer Bulletin.

The BCS Professional Panel is considering the proposals Griffiths claims that many in

250,000 bits bubble memory from Texas

A BUBBLE memory device with a capacity of more than 250,000 bits will be available in sample quantities from Texas Instruments in the fourth quarter of this year. Called the TIBO 303 the device, costing \$500, will offer an average access time of 7.3 milliseconds for the first bit of a 224-bit page of data.

Each bit in a page comes from one of 224 minor loops, each which has 1,137 bubble positions. Bubbles read by being fed simultaneously into an output track from each minor loop and they are also replicated simultaneously. The latter feature reduces the power down cycle time from the 12.8 milliseconds it takes to power down in the existing 96-bit devices from TI that employ serial

replication to 12.5 microseconds. Another notable feature of the TIBO 303 is that each loop consists of a succession of asymmetric chevron shaped conductive areas, the bubbles jumping from one to the next as they move round the loop. Existing bubble evices employ successive T and shaped areas.

For use with the TIBO 303, Texas Instruments will introduce in the second quarter of 1979 a function timing genera-

Euro IFIP for Wembley next year

conference and exhibition next year. Euro IFLP 79 is to be held year, Euro IFIP 78 is to be held at the Wembley Conference Centre, London, from September 26 to 28. This step has been taken because the last regular triennial IFIP congress in Europe was held in Stockholm in 1974 and it will be at least 1983 before another is likely to be held on still defined. the Atlantic The 1980 congress is scheduled for Tokyo

A call for papers for the Wembley conference is now ivaliable from the BCS at 13 Ministration with BCS at 13 Ministration with BCS at 13 Ministration with 18 Ministration of 1837 0471, and the deadine for receipt of notification of intention to submit a Merit Beptember 15.

Geny Pisher, immediate past Pistosia of the BCS. Is chairman of the Organising committee, and BCS president Paul Samet will be proceedings editor.

Exhibition details can be had from the Business Equipment Trade Association, 109 Kingswhy, London WC 28 SPU. Tel 01406 6233

ACOUSTIC COUPLERS COUPLERS MOORE REED & CO. LTD.

In order to recognise this dis-tinction, Griffiths proposes two grades of membership: Graduate Member, and Member, Graduate Members would be those who magnets which create the rotating magnetic fields that move the bubbles. Ti will also Members would be those who had demonstrated ability to introduce controllers compatoperate effectively in a position

ble with its TMS 9900, 9980, 9985

Oube TV

audience response

THE rapid convergence of computer and communications technology, which has already spawned BBC's Ceefax and the Post Office's Prestel services, has led to a significant new development in the US of an experimental interactive TV sys

The cable television service, known as Qube, uses Data General Eclipse minicomputers to record audience response to programmes of commercials and mediately flashes the results back into the viewer's home. It is making quite an impact in Col-umbus, Ohlo, when more than 20,000 subscribers have signed

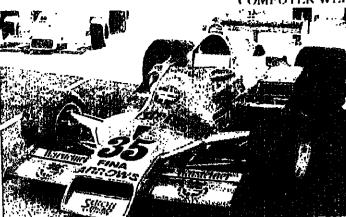
It is operated by Warner Cable Corp, part of Warner Films. The viewer response is made via a 35-key, book-sized terminai installed in the home and linked into Qube through a modem. Thirty of the keys are for channary feature of the system lies in

keys.
These are scanned by the computer every six seconds. It records which key is depressed and uses this to compile an instant audience "vote" on any particular topic. This To "against" decision is then immediately displayed on the TV screen of every subscriber taking part in the voter-

Warner Cable says that Qube has been received enthusiastically and that it will shortly be introducing a facility to allow subscribers to raise the alarm on the Qube network, if they have an accident in the home. Basic cost of the system is \$10.95 per

Yarsity chairman

THE new chalrman of the Computer Board, which buys com-puters for the universities and esearch councils, is to be Professor Robert Churchhouse of University College, Cardiff, He is succeeding Sir Henry Chilver, vice-chandellor of Cranfield in stitute of Technology, who retires on December 31:



less than a month after announcing its collaboration with the Arrows motor racing tenm (CW, July 13) Scicon Micro Systems is reviewing the situation" folowing an injunction granted against the team in the High

cems the alleged infringement of design copyrights, was gronted to Advanced Vehicle Systems, de-signers of the Shadow DN9

racing cor. Two senior members of the Arrows team, Jackie Oliver and designer Tony Southgate, previously worked for the Sha-

Scicon had developed a Zitog Z-80 based system that moni-tored and stored data from several points around the Arrows car, the data subsequently being used to analyse the car's parfor-

EEC venture capital talks

IN parallel with governmentsponsored talks between UK and French peripherals and small systems companies on possible collaboration (CWI, August 3), moves are also afoot to set up a new EEC-wide source and Commercial Finance Corof venture capital for techno- poration, has been involved.

UK. French and West German banks have been discussing the matter, and Technical Development Capital, the hightechnology arm of the Industrial

Premier defends Raca appointment

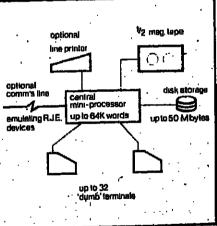
THE Prime Minister last week denied that there had been any impropriety in the appointment of Admiral of the Fleet Sir Edward Ashmore to a position with Racal (CWI, July 13).

He was replying to Labour MP Frank Allaun who complained about Sir Edward's employment with Racal-a company engaged in military electronics, and with which the Ministry of Defence has contractual relahis post at Whitehall.

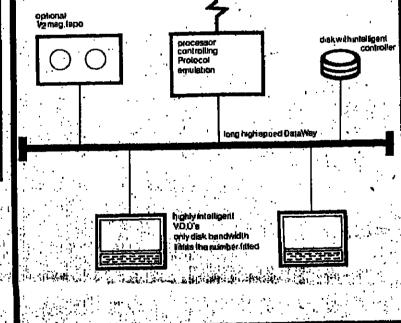
Mr Allaun claimed that at least two years should elapse before top civil servants and defence chiefs took positions related to their previous posts.

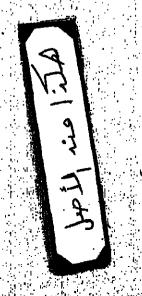
But Mr Callaghan told him in written reply that Sir Edward had applied under the business appointments rules to take a part-time appointment with Racal The application had been scrutinised by the Advisory Committee on Business

EIIESOVEREIGN First on the DataWay



A traditional key-to-disk system with every peripheral dependent on one central processor. From 1968-78, though, the most advanced method of bulk data entry."





CMCSOVEREIGN is a data entry system which uses the revolutionary CMC. developed DataWay technique for linking a multiplicity of processors.

It retains key-to-disk's essential function of preparing data for main-frame at speeds exceeding 15,000 Ksh but encourages a multiplicity of other tasks to take place at the same time. And as there's a processor for every job there's no CPU competition!

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Knight Computer Services Limited, 14 Old Park Lane, Lordon Wit:

The do-it-yourself **DP** manager

ganisation follow similar flowpaths. The accountant believes the DPM will be able to do-ithimself in respect of certain highly confidential computer not always harmonious. Being called out at 3am by a troubled operations section often has the DPM wishing the relationship print-outs. End user management suggest that their special amendments should receive the personal attention of DP

management — the project being too critical for delegation. Likewise the personal approach is adopted by com-

puter industry salesmen who, despite all evidence to the contrary, believe that the DPM is sole arbiter of company purchasing decisions. In any case, the DPM is not immune to microcomputing. Over the computing generations, he has long past. been conditioned towards What sh

and industry. These roads, according to the NCC could lead to a dead end for DP management. Future standard office products will incorporate word processing typewriters and intelligent terminals, the purchase prices of which are well within the budget responsibilities of

line management.

Meanwhile the Men from the Ministry are getting into the micro act. As often happens with

government bodies, their interest could be too late. The time for a Silicon Valley to be created in Godsiming or Godstone seems been conditioned towards What should be concerning the DP industry is the setting-up.

calculators, digital watches and TV games, microcomputing is making inroads into business

in fact, dawned is confirmed by the rash of interest being experienced by the computer establishment, many of whom seem confused. David Firnberg, director of the National Computing Cantra for example, finds it difficult to make any predictions: could well be a not to be missed applications as

len years ago... COMPUTER WEEKLY

COMPUTER WEEKLY

THIS nearior ick writings in the children for the previous process of the 70s with respect to the 70s with annihilated at this RD Ages of the 70s with a 100 pc of the 70s with a 1

French telecoms

FOLLOWING a positive repair from the national space can the French Minister Segard is expected to delike whether France should purify its own telecoms satellite.

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Plain man's guide

AT LAST I have discovered exactly what all this microelectronics nonsense is about. In a recent article in the Northern Echo, the following paragraphs succinctly set out the facts on both the technology, and the current activities of the National Enterprise Board in this area. The Northem Echo feels it is certain that the NEB will place its new microelectronics facility in its

I quote verbatim: Computers powered by

silicone chips are regarded as I can't put my finger on it. the next area to which technology is taking mankind. The North-East plant will

produce a computer known as 84 KILOBYT random access memory micro-processor.
"In simple terms, that means the computer, which will be so small that it can be worn on the

wrist like a watch, can store and transmit 64,000 separate pieces of information So that's what the NEB is up to — IBM beware.

and that more modern langu-

ages should be allowed to

replace it. This view has been widely expressed, including

within the American Standards

Fortran Committee itself. It

should not be assumed, by the

way, that because the commit-tee is based in the US and deals

with a venerable language that its members are unaware of

languages like Algol 68, Modula, Pascal and Simula.

However, the committee has over 550 outstanding detailed requests from the public for

further additions to Fortran and

has taken the pragmatic view

that Fortran will continue to

play a role in the foreseeable

future. Further development of the

standard should have benefits

by increasing the power of the language, by minimising differences between implementations and by improving portability and thus indirectly should minimise the costs.

should minimise the costs of

programming, or retraining pro-

82, so that reference below to

particular keywords and syntax is conjectural. One decision is that a metalanguage will not be used to describe. Fortrat until metalanguage thempelanguage.

Terminals

The revised American National Standard for Fortran, informally known as fortran

77, was finally approved by ANSI in April

Summer hol

I reached my EOJ and, trusting my package operator. started my exit routine

Then entered at Heathrow a zero-trip loop.

TV sport

As runners clock of and all the games people play are digitised

Only a computer can place the source of my unease

DON'T let on to your doctor that you work in the computer in-dustry. The BMA is showing disshoestring budgets, with non-union crews and so forth, produstry. The BMA is showing dis-tinat signs of paranola about our lovable machines. It is taking a survey of doctors' views on com-puters and confidentiality, and at the bottom of the questionnaire it says in big letters. "ALL DETAILS WILL BE TREATED IN STRICT-EST CONFIDENCE AND WILL NOT BE FED INTO A COMducing results described by Time magazine as "technically inept", and by Judith Crist of TV Guide as "formularised and thoroughly B-minus". Unfortunately, they make vast sums of money - \$28 NOT BE FED INTO A COMmillion gross in the case of "In Search of Noah's Ark".

The soft soap hard sell opera

I HEAR Hollywood has acquired some competition from, of all ture stories of the Wild West. people, Mormons, backed by a full of grizzly bears and so forth. computer. Schick Sunn Classics Productions Inc is a film com-Others have been "Beyond and Back", about the experiences of people who revived after being declared dead, and "The Lincoln pariy based in Park City, Utah, many miles from Beverley Hills. specialising in bland, pre-Conspiracy", a Watergate-style fabricated, "family entertain- investigation into Lincoln's ment" pictures that, despite assassination. Sunn can predict being slated by the critics, inwith considerable accuracy how variably make money. much money each will make. Sunn's principal feature is the

ding to the results.

this year (CW, May 18). Last week

DAVID MUXWORTHY, of the Edinburgh Regional Computing Centre, aummarised

Charles Sellier, the studio's

president says: "You've got to have a 'consumerable' product.

The movie business is no dif-

The computer system cost \$5

million to develop and it takes

\$1,250,000 a year to run, but it pays. The films are made on

including the ability to have

multiple exits with arbitrary

placing, multiple-level exits and unique end of loop processing

for each exit. The second is to

cope with nested loops and the

CASE sequence at the end of a

Other structures most likely

to be included in Fortran 82 are a

CASE construct and an internal

procedure. The latter at its.

simplest would be a performable

block of statements, which

would be apt since the extended

range of a DO is not permitted in

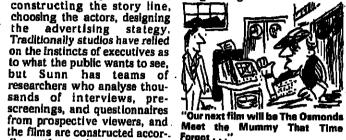
these facilities would allow

computer and assigned GO TOs

to be removed from the

ferent than marketing soap."

Soap, indeed. If Eisenstein computerised market research were alive today he'd be spinsystem it uses to plan the films, constructing the story line, choosing the actors, designing choosing the actors, designing



I've had a complaint about the sexist picture on our front page received of a girl model greeting her employers' new computer. To min amends, and on the principle that two wrongs make a right, in amends, and on the principle that two wrongs make a right, I pail another sexist picture, of a Redifon data entry system being delived to ACT Services, Southampton. The PR female person who had be photo taken describes the removal man as "really dishy," and gotta to say that he looks like John Travolta. Surely he is that beenpole is figure I see on posters in the Tube? I suspect her glasses need a loverhaul.

Home-brewed exit loophole

restrictions.

MY scout in New York has found what could be a loophole in the rules and regulations designed to control the flow of Western high technology to the Eastern bloc. While people in the UK, the US and some European countries can buy personal computers over the counter, these machines cannot easily be exported. The processors for the home-

vanced design and include components that may not be sent to certain countries under Cocom and other government

Nevertheless a steady flow of these machines seeps through the barrier by way of the computer stores. In Manhattan, for instance, there are several computer retailers

foreign governments. They pay cash for the good,

and there is no way of knowing the destination of the machines. Once in the hands of the foreign diplomats - o spies, if you like - the com puters can be wrapped in packing that is immune to customs inspection and ship. ped out.

Perhaps we should now have security clearance to drive a soldering iron?

ment will be adopted. So longs labels remain numeric only life

change is needed other than to denote comments by other than

a letter or digit in column l mi

to devise a continuation con-

vention.
It would appear very unlike

that Fortran would require semi-colon at the end of each

statement but it is in

immediately obvious how b

make a new format compatible with the old one. Multi-

statement lines and commen

on the same line as a stateman

have been requested, as has lower case characters, not

numeric labels and long!

names. The problem with the

latter two is that they con

cause ambiguities in cert

Il could be the label and

control variable or vice val

One way round this would be introduction of the significal blank, almost as radical and the significant the significant that is not a second to the significant that the signific

parture as the removal of the

are open for discussion include whether there sho

standardised debugging state ments and standardised char

piler options. Whether or not field has been mentioned about the whole of Fortran is open for the whole of Fortran is open for the whole of the whole of the way with the whole of the way were well as well a

statements, eg in

DO III = 1,10

common block.

earthat there ''' Finally Co

of a preprocessor rather than a Fortran processor. Now it seems comed and should be sent to be comed and should be sent to be

close to the United Nations brewed buff are built round headquarters and among their Z-80, 8080, and 6800 devices customers are many from the delegations there. Some, hints which are often a very ad-

the main changes in the standard. Here

he describes the lines of thought cur-

rently being followed by the ANSI For-

tran committee, X3J3, in prepairs the next standard for the language, due in

IT is arguable that Fortran should not be further developed Towards a much better Fortran

for development the core will consist initially of Fortran 77. This decision is in response to requests to include facilities in Fortran which would be of use to many programmers but which it would be unreasonable to insist appear in all standard

conforming systems.

The two immediate examples are database handling and realtime facilities, in both these cases X373 is having discussions with other interested bodies. namely the Codasyl Fortran Database Manipulation Language Committee and the International Purdue Workshop Forgrammats and of acquiring protran Committee grams.

Two classes of Se fair this two classes of Two classes of module have

tions" oriented to cover for example database, real time and graphics and one "features" or lented to include such tings as data spructures, control

used to describe Fortran until structures and array processing metalanguages themselves have been standardised. The other is that the Fortran 82 standard will consist of a core language plus committee is first specifying

Teleprinter Equipment, Division of GADO Lid 70/81, Akeman Street Tring, Hents HP23 6A. Tel Tring (044 282) 4011. Telek 82362

There have been arguments in favour of dropping double precision variables and replacing them with the ability to specify the precision, perhaps in decimal digits. Of each variable separately. This would have far reaching consequences: it would mean the end of COMMON and EQUIVALENCE for all practical purposes and could affect the separable compilation of subprograms. It is arguable that the resulting language would simply not be Fortran.

Even then the requirements of numerical analysis would not be met and a more likely adoption would be that of a set of environmental inquiry functions from which a program could. Your one-stop shop for Date Teletype 13 PVDUs 700172

Teletype 43 PVDUS 7004 / B

Teletype 35 PVDUS 7004 / B

Manitath 1200 PTermiNet 300 / 1200

Teletem 1 | 32 PECwritef LA 38

from which a program could

tem's arithmetic properties.

This less radical approach would allow for double length contiguous. This could give complex and double and half length integer variables; packed decimal variables have also been decimal variables have also been discussed. Other possible types of variable include pointers, labels and hits as wall metic should be in Fortran 82. labels and bits as well as There appears to be little fun-damental change so far put forprogrammer-defined types. ome of these may be too far ward for input/output. There are advanced when the problems of relating character to numeric proposals to generalise internal and direct-access files and freestorage units have still to be olved in a machine indexed sequential files, to exndependent way.

Other things under considera- dress the problems of multifile Fortran 77. However, this is now illegiston be extended as the include extensions to characteristics. The introduction of function. The introduction of these facilities would allow explicitly and a statement to allow partitioning of arrays, in-cluding, dummy argument arrays, into other arrays - a

form of synonym facility, eg SUBROUTINES (A.H)
REAL A(N*N+2*H+2)
MAP/A/C (N.H).M(H).S(N).MC.HM

This would be of use particu-larly in writing subroutine libraries but might better be in-cluded in a more general form of data structure. More fundamen-tal extensions being debated in plude dynamic storage of local scalar variables and arrays and recursion scalar-variables and arrays and recursion.

Array processing was for a time included in the revision of the 1966 standard but was finally yoted out. Now it has been resed again and there is some doubt as to whether it should be valid, for example, to consider a

A MEETING to be held in London at the end of November this year offers the British computing public an unusual opportantly to influence the condition development of Fortran A revised American Standard for fortran, Informally known as Portran, 77, was finally approved in April this year and the same doquiment is being your on for possible adoption as in 180 standard. Since fanglings standards are by default valid only for five years the strength yelms to be considering what Fortran 82 about contain. The London meeting will be

row of a two-dimensional array

as a single entity when by de-

efficiency problems if the row

were passed as an argument to a

format input/output, to consider

tend format codes and to ad-

is no proposal to adopt NAMELIST, asynchronous I/O

For Fortran 77, the view was

taken that any relaxation on the

rules for the written form of the

anguage should be the function

A MEETING to be held in Lon-

possible that a free-form state- author.

or stream access.

held under the suspices of liv-and will discuss Fortran 22, Since, in effect, ANSI per-duces the Fortran standard of behalf of ISO, the object of the meeting will be to allow stiff meeting will be to allow stiff countries to advise ANSI of countries to advise Antitheir riseds at an early stage their riseds at an early stage the development. The BSI Frethe development. The BSI Frethe development and the gramming Languages Coming
tee has set up a working good
tee has set up a good
tee has set up a working good
bright to D.T. Muxwork Computer Computer
tee has set up a working good
tee has set up

IBM and Xerox settle patents suits out of court

schemes, he said, were time

limited, and were due to run out

"within three to five years."

They would be allowed to run

their natural course, and would

not be dismantled, he said, but

the Dol would not be encou-

raged to "sell" the schemes to

Sir Keith suid "I am not en-

industry on a continuing basis.

amoured of the proliferation of

may be a special reason to jus-

tify it, but that cannot be

While not approving of the

method of support for the

microelectronics industry, Sir

Keith has already said that the

Conservatives would honour

existing commitments made to

industry, if they won the elec-

Foord said that ITT was

waiting for IBM to introduce

Orbit before making a move.

There was no intention of intro-

ducing a direct alternative to the

IBM 3790 remote communica-

tions system before then be-

cause Orbit was likely to super-

Foord told Computer Weekly

that ITT would be "mad" to stay

out of the word processing mar-

ket and was definitely making

He said ITT's policy was to

concentrate on the electronic

office and data communications

markets, in the latter area with

its IBM compatible products, but

it had no intention of chal-

lenging IBM with plug compat-

One area to which ITT was

"totally committed," according

to Foord, was the remote batch

terminal business, and ITT

would be launching a group of RBT systems later this year,

weighing in against existing suppliers like Data 100, Harris

Systems and Four Phase, as well

as against IBM itself.

The new products would be

introduced by ITT last year

(CW, September 22, 1977). Foord said the 3630 had not proved

satisfactory for the market and

TO upgrade the UK telex net-work the Post Office has ordered

was no longer being sold.

PO £24m order

new versions of the 3630 RBT

moves in that direction.

ble disc or tape drives.

sede the 3790.

assessed from opposition."

A SETTLEMENT out of court has been reached between IBM and Xerox in the tronic Typing System (CW. March 9) patents suits they have been fighting Over the intervening years Xerox against each other. The two companies brought several more suits aginst IBM. have agreed to drop all litigation and both in the US and Canada, and only one grant licences to each other for all their grant licences to each other for all their was concluded — a Canadian suit which satents. In addition, IBM will pay Xerox Xerox won.

natents in 1970 when IBM brought out a (Xerox) issued a joint statement in which patents in the patent disputes had the patent disputes had the patent disputes had the hitherto dominated by Xerox. IBM "resulted in significant cost and a subretaliated earlier this year by suing stantial drain on management time, pro-Xerox for infringing its word processor duct development and legal resources of

FUTURE Conservative

government would allow the

current Department of Industry

schemes to invest around £100

million in microelectronic

manufacturing and use (CW,

August 3) to run their three to

five year course. But there

would still be a radically dif-

ferent approach to government

involvement in the industry.

according to Sir Keith Joseph,

the Conservative Party industry spokesman (writes Martin

"The role of government as

customer will be a key element

in the Conservative party's rela-

tions with industry if it is returned to power," said Sir

Keith in an exclusive Computer

Weekly interview. Such clientship, he said,

The chairmen of the two companies. Xerox first sued IBM for infringing Frank Cary (IBM) and Peter McColough

and promoting industry has subsidies to industry, they do been standard practice in the more harm than good. There

clientship with suppliers. industry, if they wor tion (CW, August 3).

Tories to let Dol micro

pushing the "state of the art" in

design philosophies and con-

cerned with defining particular

designs, "The government's role

should be in laying down

specifications against which in-

dustry can design products that

have the widest, preferably

This method of supporting

Ministry of Defence for a long

time, he said, but many other

similar purchasing power could

of the Post Office in this respect,

he added that he felt it was not

showing signs of improving its

WORD processing products, a group of remote ITT Business Systems Group (UK). Orbit is ex-

batch terminals and an alternative to IBM's projected local processor codenamed Orbit are all distributed processing applications as a replace-

planned by ITT, according to Jim Foord, the newly-appointed director and general manager of announced by the end of the year (CW, June 8).

MODEL 1560-AS

High-speed, compact, wit self-contained electronic

and power supp

ITT into word-process Orbit

Following his recent criticism

government departments with

world, market," he said.

do the same.

GOVERNMENT COMPUTING

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Aminicomputer with H/W Floating Point, 256Kb Main Memory, at least 60 Mb Disc Capacity, 1 x 9 track 1600 bpt PE Magnetic Tepo, Graphics VDU. Metris Printer, PTR/P, 30 cps Teletype, facilities for up to 8 remote terminals, a Multi-program Operating System, Spholing, Fortran and Cobol compilers.

Applications for operational requirements quoting CE / 89, should be sent to Central Computer Agency, Room 822, Riverwalk House, 157-181 Millbank, London SW 1P 487

plug-compatible reader/punch

tion reader/punch with serial

ayachronous R8-232C compalible interface. Designed to operate with a terminal device : i

Reader will generate date at all

ud rales up lo 600 beud

wo modes of operation are

Kovidedi - Auto Mode — imulales Model ASR 33 elelype using ASCII defined

kla codes (DG 1, 2, 3 and 4) o activate/deactivate the reader of punch; *Mariual Mode* — Code

selling whit to LOCAL mode.

For full details, write or call us.

ransparent mode. Panel switches control clivation/deactivation of reader r punch and associated terminal device.

ps duplication teature is provided by

SWEDA INTERNATIONAL, INC.

idard baud rates up to 2400 baud.

unch accepia dela et all standard

minuous or 4800 baud batch, liking a 32 character butter,

cepts, but should not be con-

policies run course

beland us will enable each company to concentrate on the basic business of dealing with the opportunities of the Inarketplace."

Under the new arrangement, the sharing of patents will cover all of both companies' products, and will apply to all sitents existing now or applied for over the next five years. There will be no charge for the use of any of the patents, apart from the lump sum of \$25 million IBM is paying now.

The agreement covers computer

word processors, but as Xerox is no longer in the mainframe business this is unlikely to be of significance.

Although they are no longer suing each other, neither company is out of the litigation woods yet. Both are being sued for monopolising their markets, IBM by the US government, and Xerox by two other copier makers, SCM Corporation and Van Dyk Research Company. A jury in Connecticut last month found in favour of SCM, but has yet to assess the damages to be paid.

New computer storage

method based on lasers

100,000,000 bits per square

available in the not too distant future if the work being carried

out by these scientists at IBM's research isboratory at San Jose, California, comes to fruition.

The storage technique the scientists are working on is called the storage to the scientists.

shotochemical hole-burning. A

aser beam is concentrated on a

sample of photoreactive material and the frequency of the beam is set at a number of precise levels in order to change the chemical nature of the molecules that are receptive to those specific frequencies. This means that the

receptive to more spectric frequencies. This means that the material can no longer absorb light at those frequencies and the "holes" created can be used to represent binary ones while the absence of a "hole" can indicate

inary zero. According to IBM, the

requency absorption peak of the material is wide enough compared with the lazer frequency to allow 1,000 "holes" to be burned. They can then be read by reducing the power of the lazer and warring its frequency of the lazer.

leser and varying its frequency over the same range as that used for writing.

the computer industry," GEC

puter industry as very important

COMPUTER ploneer Professor

Tom Kilburn has received one of

this year's three Royal Medals,

presented by the Queen on the recommendation of the Royal.

work the Post Office has ordered 12,000-ITT Creed 2300 tale12,000-ITT Creed 2300 taleprinters worth a total of f24 million. Delivery is due to be comlion. Delivery is due to be complated by the end of 1979.
University, is already an FRS Mark I at Manchester.

computer industry

Weinstock's view of the

TAKING issue with a statement a spokesman pointed out that in last week's Computer Weekly turnover doubled in the year to that he was "lukewarm towards March 1978, and will double

Underlining the commitment space there, and the first com-

being made by the company to puter will come out of the new the GEC Computers subsidiary, plant in October," he said.

Royal medal for Prof Kilburn

This frequency addressing method could enable 1,000 bits

to be stored in an element of

photoresctive material one

micrometre in diameter, so that 100,000,000 elements could

atore 100,000,000,000 bits in an

area of one square centimetre.

A US patent entitled

"Frequency Selective Optical
Data Storage System" has just

tists working on the project. The three in our picture (from left),

Dietrich Haarer, George Castro

shown adjusting an apparatus that projects light from a laser on to a sample of photoreactive storage material.

George Castro, , who is shager of the physical science partment at the San Jose lab,

says, "We have 4 long way to go before this can be made into a technology. So far we are inves-

tigating a variety of potential storage materials and are trying to

understand the temperature

limitations of the phanomena. The technique works only whe

the photographics material is

cooled to nearly absolute zoro, the temperature at which thermal motion ceases.

again this year. He also noted

new factory at Dunstable and

. háve plans to acquire more

and a Distinguished Fellow of

the BCS. He receives the Royal Medal "for his striking innova-

tions in computer hardware over

30 years." With the late Profes-

sor Fred Williams, Professor

and Roger MacFarlane, are

been awarded to four IBM scie



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Basic Timesharing seeks systems builders SYSTEMS builders are being from disclosure of customer in- software alongside the general sought by Basic Timesharing to formation and the ability to accounting packages; and Cara, write application software and support a large number of ter- : which runs a bureau or care.

sell the BTI 4000 business minals, up to 32 depending on 4000 uses another for program timesharing computer system to specific market sectors.

The BTI 4000 is built around Three distributors have so far Basic Timesharing would like been appointed. Kalamazoo, a dozen UK distributors, each boards by Basic Timesharing in which offers the system to the operating in a specific distributors and runs a propricularly BTI operating system, key features of which are security has developed word processing for

support a large number of ter- which runs a bureau on one BTI minals, up to 32 depending on 4000, uses another for program

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- managing director Sir Arnold that a new plant has been ac-Weinstock told Computer quired (CW, July 27). Weekly that he views the com-



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EDITED BY PETER HEWITT

GILB'S MYTHODOLOGY

Professional challenge of 'good' programmer

good programmer is capable of producing error-free programs, in a short calendar time, which run very quickly in operation and which take little primary memory space during

Unfortunately tradition is rarely a useful guide when applied to a rapidly changing set of human and machine

Let me give my particular definition of "programmer" for the purposes of this discussion without pretending that it is the "right" definition for the whole world.

A programmer writes source code for machine interpretation, and carries out a varied set of associated tasks in order to arrive at the source code and to verify reasonable correctness and future usefulness of the programs.

The programmer is not primarily a designer of the sys-tem, but is primurily the func-tion that translates a reasonably detailed design into a practical working program and associated test data, documentation and control statements.

This above definition does not preclude the programmer from performing application analysis, system design or project management — but these are other roles, which I am excluding from this discus-

INFORMATION

technical, legal and

information systems

and their use. Hardware software and security

considerations will

as will the needs

for an application

of legal controls?

codes of conduct

social implications,

The Journal will be

of interest to

engineers.

and practice and

be covered in detail

social issues of

computer-based

PRIVACY

will cover the

grummer? My general answer is one who can translate the system specification into a working program and meet any feasible specified set of goals and constraints.

Notice that I did not say anything about getting the job done quickly, or writing elegant structured logic. The list of potential programming goals and constraints may be long and varied from time to time. The goals and constraints can vary In degree and as to which are specified at all.

The goal/constraint list night include such varied factors as ease of expansion of logic in the future; maintenance ease; portability; failure reliability: automatic recoverability from error situations: and degree of automatic test-

This list is in no way intended to be complete, but only to stimulate us to remember some of the attributes which a programmer might be expected to produce. Notice that I have not in-

cluded space or speed requirements, partially because they are obvious, and partially to dramatise the point that they may not be critical to a given application

The better a programmer is, the better he or she can respond to any set of requirements for program quality, and

information

integrity availability security DIIVacy

The varied requirements have a staggering number of permutations. The professional programmer must be prenared to learn a very large number of technological approaches for constructing programs to meet these

The programmer must be prepared to update this knowledge as new methods and techniques develop, and this is a staggering task which even at present requires the use of a handbook of current practice and products, rather than any attempt to learn it all

I realise that many pro-grammers' real world is limited to getting the functional applirequirements apparently working in a minimum of time, that they are too rarely required to do more in-itially, and that there is very little reward in most environments for initiating quality improvements which the managers, users and designer/ analysts should have specified, but failed to do so.

But we are maturing as a profession; an increasing number of working environments will be looking for and rewarding the highly professional programmer. One who is not caught up in the outmoded and inflexible



dogmas of structure or testing

or documentation or language,

but who is prepared to make

known programming technology in order to meet the

quality requirements of the

users - however unusua

these may be compared to the

The "good" programmer is fully aware of the tools of the

trade, and their limitations. He

or she is able to "know wha

they do not know" and admit i

hance their knowledge by

looking for answers. Becoming

a "good" programmer is a con-

tinuous professional challenge.

to others — and then to en

run-of-the-mill program.

remarks (CW, July 13) on my "Verification is dead almost" column (CW, June not disagree with the points he makes and find his examples of the limited survival of verification most

I would particularly like to thank him for bringing up the aspect of fraud prevention. must admit that I was not conscious of this aspect of verification. I was engrossed in the cost/effectiveness

It would be most interesting if Mr Warmington or other readers would care to comment on their experiences with multiple person data entry verification techniques as a fraud prevention and detection device. In particular, I should like to see this compared with the option of using automatic checks on a single human data entry operator.

Certainly my hypothesis was rather strongly worded in an attempt to provoke revaluation if we are using i extensively. I don't think i will ever totally be obsolete, since it probably has a set of properties needed by special applications, which is a better

other syallable technique for that application. Old techni-ques, like Old Soldiers, never die, they just fade away.

GIM offers 32K ROMS

TWO versions of a 32k bit ROM.

TWO versions of a 32k bit ROM.
Offering 450 and 3500 hanose cond access time respectively have been added to its range of memory products by General Instrument Microelectronics.

Known as the Ross 9382 their can be used to replace directly two lake parts without recourse to replace directly two lake parts without recourse to regard the results of dynamics.



Buffer to eliminate printing bottlenecks with teleprocessing

printer buffering to its IBM rown's Operating System Services aims to eliminate a major bolttleneck associated with remote printing to IBM 3270 or equivalent printers. With most TP monitors,

remote printing is slowed down considerably by the inability of the printer to buffer transmitted data while it is printing. The printer, able to perform only one iob at a time, has to wait to receive a complete block before it is able to print and therefore never reaches maximum print-

With the new Thirst feature, a user can designate as a buffer any device which is attached to the same control unit as the printer. The designated device, for example a display, takes over the job of receiving the transmitted data.

Developed in the UK and available in the UK and Europe for the last seven years, Thirst has been notably successful in achieving fast response times in

WITH the addition of remote DOS and DOS/VS sites supply ting large numbers of tembra Brown's Operating System

Services also markets an only program development systal called Shaft. Including a some library update facility, the stoware enables programment amend and list a program is mit it for a run, and examinet results all while sitting at a te

A stand-alone package, Ship, can be run on DOS/VS system. either with or without a lit monitor. It uses a 64K virtig partition, 16K of which is first and rents for £1,200 per annu for a three terminal system i further £400 per year is payab for each additional terminal Latest to install the softwar

was Unichem Ltd, a phamaceutical wholesaler, which operates a 370/148 supporting network of over 200 terminals Unichem chose the product be cause it "outperformed all the others" according to its Di achieved some spectacular pro

Shrinking data storage for IBM OS users

A SOFTWARE product introduced to Europe and the UK by Informatics SA offers IBM OS users substantial data storage and transmission economies as well as an unusual approach to file security.

The system, Shrink, provides generalised routines for data compression and encryption. It works by analysing each file to identify the most frequently used byte combinations, which are then coded as bit patterns.

The recording is said to be able to achieve major savings in storage requirements, typically reducing a commercial application file to between 20% and 40% of its original size.

storage needs, the compression

of data can also reduce line a modern requirements and costs in computer-to-computer con munications and data transm sion. Similar savings arrows in channel utilisation, when turnround time on 1/0 boun

jobs and improving throughput Security benefits arise from the fact that Shrink encoder each file uniquely. Thus event data is stolen, it becomes meaningless without the system's decryption keys. Shrink is accessed by Cal

commands incorporated into application programs after standard read/write statements Said to have low memory execution overheads, the system can be specifically instructed As well as reducing online leave record key areas w

Real time disc subsystem

PDP-11 is being implemented by Gemini Industrial Systems for It is designed for systems in which limited core store is available sequencing programs. The disc subsystem allocates sequenced programs a priority according to their rate of use and store them on disc. Those with high priority are permanently loaded into memory, while those with lower priority are consistent.

lower priority are overlaid into memory as required.

The system is for use with a process control package written by ICI in RTL/2 for batchented schemics plants. Genin UK has been closely in-volved in the development of the package, which uses ICI's multi-tasking operating system, MTS/3#

CLAIMING to be the first at ware house in mid-Chesis Pentagon Computer Series Formed in June, it said that has "considerable experies".

of IBM, ICL, and Burn systems but plans to construct on specific mini and man market sectors. Its office stead 390 High Sectors and Suppose the sectors of the sect 390 High Street. Winst Cheshire Tel: 06065 54050

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THIS diagram shows it way (not counting rotations at reflections) to place 16 chts Knights on a 10 x 10 bost in the all march at the country of the

This week's problem carry out the same task on the board, using the minimum to for that area, which knights. See page 37 for the possible configuration.

SOFTWARE FILE -2

BCS Codasyl debate

tems implementation language based on Pascal.

Called Euclid, the language is specifically designed

for writing systems software that must be verified.

A COMPANY which specialises

in engineering application soft-ware for Hewlett-Packard sys-

tems has produced two pack-

ages for desk-top computers

which generate tapes for

numerically controlled machine

The packages, which are

available from Engineering

Computer Services Ltd, run on

HP-9825 systems and implement

the AP 100 system for machining

centres and the AP 200 system

for turning centres. The soft-

ware includes post-processors

which convert the basic

geometry into machining in-

structions for specific machine

Said to include tape prepara-

Generating N/C tapes

from desk-top machines

A conference on Codasy database accessprints is to a near by the gritish Computer Society at the South Bank Polytechnic in London on September 4. The speakers, members of the BCS Codasyl DBAWG and ODLC, will include Ed Tozer of Arthur Andersen and Roger Tagg of

cicon.
The registration fee is £20 for BCS members (£10 for student members) and £25 for non-members. All delegates will receive a copy of the 1978 Codasyl Data Definition Language Journal of Develop-

Pentagon funds SIL

development of the first compiler for a new sys- a joint venture by the Toronto University and the

sufficient for about 90% of all NC

work, the systems are targeted

at two main categories of user:

first time users currently pre-

paring tapes manually or using a

bureau; and those wishing to

extend existing in-house

The programs, which use

question and answer techniques

and are written in an APT-type

language, cost £2,750 each, and

the post-processors between

£400 and £700. The company will

also supply complete systems

including hardware from around

Engineering Computer

Services is at Piccadilly, Tam-

worth, Staffs, Tel: Tamworth

based on Pascal

Cross refs in preprocessor for DEC Coral

A PREPROCESSOR for Coral and a file handling system, currently written in DEC Coral for the PDP-11, are the latest packages to be announced by consultants Brampton and Brampton, previously based in Lewes,

The Coral preprocessor, itself written in DEC Coral, offers three main facilities: source code reformatting; the generation of

timesharing company I. P. Sharp, best known for its expertise in APL. The work is being funded by the

Advanced Research Projects Agency of the Dod

Laboratories.

ised access to data.

code Coral reserved words in shorthand left-justified to the edge of the listing

by some to be a function better left to the computer than to the programmer, is designed to show clearly the block structure of the new package is not

Users of SDI's Grasp may in

Online maintenance of

Fleet program library

AN online version of the Fleet program library maintenance system has been announced by SDI for IBM DOS and DOS/VS

Fiset Online allows program

mers to update source programs interactively and examine the output from compilations and test runs on a video terminal before routing output to the line

Similar processors have been developed in Source code formatting, which is thought the past by the Royal Signals and Radar Establishment, Malvern, and by Stephen

The new package is notable for providing the program by the use of systematic inde- in addition a cross reference listing. This summary, output as a comment after the Statements at the same logical level all FINISH statement, lists all identifiers and

cross reference listings; and the ability to begin in the same column and labels are labels in alphabetical order with each occurrence documented by line

number. The software is sold by

Brampton for £500. The other new package, Varifile, provides RSX-11 and IAS users with a flexible filing system said to be particularly suitable for online and data base applications. It can be accessed by any language running on the PDP-11.

The software runs in a 64K Particular features include support for variable length batch partition and is thus not dependent on a TP monitor. Up records and variable length keys to seven display screens can be handled simultaneously, which may either use individual libraries or share program within one file; a facility for generic operations, using partial keys; and the dynamic mapping

of user files onto logical units. Benefits claimed for the system include fast operation, efficient use of disc space, and easy file handling. The package, which is also being implemented in PL/I for IBM 370 systems, is available for £4,000 and can also be rented.

Brampton and Brampton which also markets aids calle Cosh and Coin for Coral string handling and interactive testing respectively, has moved this year to: The Old Thatch, Cardinals Green, Horseheath, Cambridge. Tel: 0223 891725.

supported on NCR hardware, the other being Cincom's Total.

The language will be suitable for constructing complete operating systems, it is understood, as well as for writing "unbreakable" security modules or kernels to prevent unauthor-An interesting aspect of the

project is that many of the Said to offer features inrequirements established for Euclid also form part of the Experience gained in the lementation of Euclid, which has already been under way for about a year, could therefore

about a year, could thousand the contain important lessons for base recovery.

The news follows reports One significant area is that of well have shown interest in

aliasing, which both languages are anxious to prohibit. According to Dr Brian Wichman, of the UK National Physical File, May 25). Labiratory, the Euclid team has already shown in some major interactive. Cobol cases that aliasing can indeed be

 Euclid should not be confused with two existing graphics software packages, which already share the name. These are the system developed by Davy Computing, of Sheffield, and a French-developed package off-ered in the UK by SEL (CW,

A major objective of the research is to improve the reliability and security of system level software, by facilitating the production of code that is subsequently be widely publicised. It is possible, therefore, that machine is launched the compiler will eventually enter the public domain, as is the plan for the Ironman real time language, also an ARPA project. A DATABASE management system that runs on a range of NCR According to an I. P. Sharp

machines has been developed by Stanwright Consulting Services, an Australian software house based in Melbourne, according to ation will be for Digital published reports. The system, Access, is said to be available for Equipment's PDP-11 range, NCR Criterion and 8400 series equipment, as well as on the older Century series systems. It is thought to be only the second DBMS models 34 and above. It will run under the UNIX operating system developed by Bell The provision of aids for con-

verting from Total suggests that at least part of the market anticipated is formed of existing Total users. In addition to being logically compatible at file level, the system offers a bridging facility such that Total application programs do not have to be recompiled on changing to

cluding easy to use data defini-tion and data manipulation languages, extensive run-time diagnostics, and dynamic buffer allocation, the system also provides utilities for database back-up and restore and data-

that both Cincom and Honey-Pobol, an end-user oriented language also developed in Melbourne, Australia (Software

AN INTERACTIVE version of Cobol has been announced by on any system with at least 48K bytes of memory, the language includes features for screen formatting and operator prompting, as well as facilities to accept, reformat, edit, and process online data input.

pecord, line feed will be interpreted as a null record and. Details of Univac therefore, end-of-file.

mayon has become available on the manufacturing control system developed by Univac for the BC/7 small business computer (CW, April 6).

Designed for small and medium sized manufacturing

businesses with turnovers between £500,000 and £7 million, the production management

requirement planning.

component use quantities either directly or as an input to other modules, for example requirements planning.

The latter function handles a

forward periods. By comparing predicted component require-ments, with stock on order inpackage is intended to be set up and run by production management and run by production management themselves.

The system, designed for prediction, net requirements can be identified, off-set by supplier dominantly batch-orientated and manufacturing lead times.

A complete hardware manufacturing lead times.

A complete hardware software system, requiring no specialist or computer staff to operate it, can be rented from about 6800 per month, notes the

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Puzzlet

that all unoccupied squares at under attack by at least and known and a stack by at least and the stack by at least and the stack by at least to t Knight There is no way low the job with fewer than

Using Telex terminals much processing is performed on each input record. In addition, end-of-record can

£15.000.

THE widespread availability of Telex terminals must have prompted many to consider heir use as a link to a computer network, particularly where a company is reluctant to hire or buy a terminal solely for DP

In addition to being commonly in use already by many multi-centre offices, Telex facilitles have the further advantage that Telex lines to Europe and elsewhere are in general more reliable than telephone lines for data transmission

The relatively slow speed of the Telex system, viz 15 cps, limits its use in receiving and Printing lengthy outputs. How-ever, the system can be adapted larly easily for submitting regular input data to an applicaion system and receiving short

In the input role, the best tacic is to prepare paper tage input offline and feed it through the leader once the terminal has

leader once the terminal has included, say for five seconds, to been connected to its destination. With a machine such as the library its machine such as the library its hot possible to return a message reporting that the data has been accepted, or to return an exception report.

Atkins On-Line, at Epsom, has been using Telex in this role for many years and has found APL an ideal language for writing a specific property who hever stops to the specific that the first an ideal language for writing a small, so that data dan be lost if the racter set.

type commands will accept elther characters as a record terminator, but having taken carriage return as end-of-

be a problem as it is indicated by

a pair of characters — carriage

return and line feed — rather

than by a single code.

Many common Edit Build file

So the input program itself must handle null records, which is virtually impossible with a Build-type command system. A special terminator is also required for and-of-file.

After end-of-file, it is normal to allow a few inches of blank tape to feed through. However, the Telex character set does not include a null character; -- corresponding to no holes punched — so a walt command should be included, say for five seconds, to

production control pack.

With the formal launch of the package in the UK, mora information has become available on the manufacturing control system of explosion facilities, yielding such information as yielding such information and pro-

time-phased production plan of end-products, over up to sixty.

The Bomp sub-system, based company,

Realistic career paths for operations staff

son, the trip up the promotional he climbs quickly to the level of senior operator but finds further

progress very hard going.
This is a sad and wasteful state of affairs. It is frustrating for the staff and detrimental to both the companies concerned and the computing industry as a

To rectify the situation, and so make use of the vast wealth of ability and experience that exists within operations, we need a change in the attitude of companies, a greater awareness from operations manugers, and a broader definition of the term 'operations." In a nutshell, we must have realistic career paths

The first step is conceptual in



must realise that operations en-

DP management must accept the fact that operators, during the normal course of their work, become involved in technical matters which relate both to the systems hardware and to its

This point was raised by George Stevenson, a contract operator, when speaking at a meeting of the Central London Branch of the Data Processing Management Association (Op

Management Association (Op-Spot, May 25).

He said that DP management must realise what operations is all about and encourage opera-tors and programmers to work to together for their mutual bene-

Fully endorsing Stevenson's views, I would add that

tions staff. Remember that on primarily that of decisionmaker, often under pressure.

Taking these factors into account, a realistic career path would lead either into technical support roles, including troubleshooting, or positions which call mainly for supervisory ability. In the latter case the progression might well mean moving out of

the computing department.

Add to all this the fact that more and more sites are implementing TP networks of one sort or another, and we have another direction in which operations staff may progress. In fact a move into TP would prove to be very interesting. It calls for a thorough undersian-ding of the workings of the system, and provides the oppor-

tunity to visit the sites of the If operations staff wish to staff. It is all about investigating move into programming or systems analysis they should be slightly deeper than is considgiven the opportunity to do so. A ered the norm. It also concerns good method is to move the operator to the department concerned for a trial period of a there, and the department is satisfied he has the ability for the work, the transfer should be

Of course, the part played by the operations manager is of great significance. He must take interest in his staff, and take

Taking the operator's abilities and interests into account, the computing courses he will be sent on should be worked out. It operating the system, and that operating the system, and that

Fortunately, some companies are aware of the importance of the talent that exists within their operations team. At BOC • Datasolve, for instance, the progress of staff is monitored

John Robbins, who is Datacentre manager at Data-

Operators often complain that nobody listens to their point of view. Well, Op Spot is listening; and Bernard Alien would like to hear your opinions and ideas on all matters relating to computer operations.

Your letters should be sent to Op. Spot. Computer Weekly, Dorset House, Stanford Street, London SET BLU, Telephone

the evening and night shifts, the sort of starting point. We keep miss. To them the "right an eye on the staff to see what attributes they have." But operations staff must take

the initiative themselves. Speaking at the aforementioned DPMA meeting, Jack French. operations manager at the Bishopsgate site of the Bank of Belgium, said:

"Many operators are not suf-

ficiently interested to become involved in technical matters. Too many are just interested in getting home early."

Before French's staff set about lynching him, I must point out that he went on to say that those with the right attitude and motivation should be encouraged and helped to move into technical roles.

The point about attitude is of great significance. Let's be clear about what I consider to be the 'right attitude" from operations technical matters at a level taking the trouble to ask questions and reading technical manuals which are often quite difficult to understand.

I emphasise this point because it is the one which some opera-

MICRO NEWS

the computer room and looking busy. To please them, there is no need for technical expertise or appreciation of the system. Just

as a good operator. Finally, let's consider career progression in relation to shift

look busy and they will rate you

Now for a person to come off shift work he must be willing to has been with the company concerned for a considerable time, that might be a reasonable,

if not princely, sum. Some argue that to overcome this problem, operations staff should be encouraged to live off their basic wage and save the allowance. They say that this will prepare the operators for the time when they have to sacrifice the extra money in order to further their careers.

I believe we need a complete rethink about the shift allowance, because at the moment too many companies and staff associations seem to think of it as a perk for operations staff. The role played by operations staff should be reflected in their

Successful jobs should impact of micros be displayed, too

THIS week's hint relates to notify the operator of the Mccessful job as well as the follows. George 2 macro messages, and is from Ron Linton, who is comnessume if there is no failure message that the job is OK, beputer operations controller at Manchester Polytechnic and a equiar contributor to Op Spot. cause it is possible for a faulty job regular contributor to Up Spot.

According to Linton, in the 'event of a production job failing, the operator will have to contact someone in the programming department. He calls for standards to make the operator's life that bit description to simply 'drop off the end' and bypass a fallers

"To make the failures obvious. firet."

I'm keen to hear your technical it is worthwhile setting as a

standard that every job, upon completion, should display to the operators a message of the form 'RUN-OK or 'RUN FAILED'." Ron says that these messages should be written into each job description or macro, and explains why it is necessary to

He says, "It is not sufficient to

message.
'I have known the latter to happen, with the result that a failed job was assumed to be co-rect, and a subsequent job no tried to utilise the results of the

and non-technical hints, and offer £5 for each one that is published in Op Spot. Please state clearly your name and that of your con-pany, giving a telephone number on which you may be contested during the daytime.

Union calls for YDU health hazard research

CONCERNED for the health of its members, the National Union of Bank Employees has requout some research into the health hazards of operating VDUs and microfiche readers.

Areas defined by the union are the danger of radiation and the long-term effects on the operators' eyesight. The union has London (CW, February 23).

regular eyesight check-ups of the operators of the units.

bank's medical staff and management are to attend a course on the effects of VDUson eyesight to be held by the in stitute of Ophthalmology in

Edited by Martin Banks

the trouble to find out what their streets ite. He must carry out staff appraisals every three months or so. How is the street ite. He must carry out staff appraisals every three months or so. set for US launch

the operators themselves are to be instrumental in THE Hoskyns' Hotel System, which started its officially, it is thought to be actively considering

country, is to be sold on the US market through
Hoskyns' parent company, Martin Marietta.
And although the company would not comment

And although the company would not comment

public existence six weeks ago with an order for a total of five systems for Hollday Inn hotels in this Hoskyns now holds firm orders and options for

According to Hoskyns' marketing director, Richard Holway, the Hotel System was a good example of how microsystems could be exploited in a commercial environment, once i definable market sector was

In the case of the Hotel System, the market is the large number of hotels that fall within the 60 to 300 bed range, although the system is capable of coping with hotels with larger numbers of beds.

with hotels with larger numbers of beds.

The system is designed to provide all the necessary "front office" functions of a hotel, in terms of reservations are supported by the starting posts. terms of reservations, guest accounting and administration. To add to this, the company is also working on software to cover the "back office" func-tions of stock control and ledger

made easy FINDING one's way round large exhibitions is usually one of the more tedious ways of spendings day, and the US electronic cort

be held in Los Angeles ner

month, is usually one of the

larger shows.

To offer succour to the ways to sain the sain sa

tors to the show, and to gain ju

a little self-promotion as wa

Warren Point will be using a version of its London Under

ground routefinder on its stan

at the show, re-programmed point the way round the exhibit

don Transport at the

Warren Point, which will warren Point, which part of a large UK continged exhibitors at Wescon, have in stalled the Routefinder for large processor manufacturing capacity, Christie believes that it is imperative for the govern-ment to go beyond the National Enterprise Board's initiative in setting up Inmos, its venture into semiconductor manufacuring, and that the TUC could play the role of catalyst.

By Robin Webster

August 3).

nology, including employment, have been highlighted by

Congress in September (CW,

The resolutions split the pro-

blem into two main areas: the

need for the creation of a well-

defined government policy

towards information technology

to allay trade union fears over

ance of setting up an indigenous

The Society of Civil and Pub-

lic Servants, for example, has

called for greater TUC pressure

on the government to develop a viable employment strategy that

matches the rapid incursion of

information technology into in-

"The SCPS has concluded that

there can be no opting out of the

microprocessor development

field," said Campbell Christie,

deputy general secretary of the SCPS. "We are going to have

this industry and therefore we

are going to be affected by the

elopment of systems using

We are most concerned with

the social implications, however. For example, the Civil Service is

already using word processing

systems and these will have a

fundamental effect on the

employment of secretaries.
"The 'electronic office,' with

and electronic mail, is possible

The consequences for employ-ment are horrendous."

lities such as electronic filing

The SCPS has proposed that

steps be taken by the govern-ment to ensure that there are

enough trained people to meet

the manufacturing require-ments of both hardware and

software fields.
On setting up a UK micro-

microelectronics industry.

oyment; and the import-

Something positive has to be done about the introduction of he microprocessor," he said. "It is not simply a further development of the computer," it is much more fundamental; it is as

ADD-ON memory for the DECsystem-2040, 2080 and 2080 mainframes has been introduced by Ampex which allows users to expand their main memory from the Digital Equipment limit of just over a Megaword to 4 Megawords. The DECsystem-20 is a 36-bit

word machine.
Ampex offers the 750
nanosecond memory in 128Kword modules, and 512K-word
costs \$120,000.

AUEW/Tass supports the SCPS assurances" had been given to

tronics industry and the setting jobs for five years ahead," said a

"We have guaranteed their

PO spokesman, "and this agree-

ment will be undated at yearly

Other resolutions on these

topics have been tabled by the

National Union of Bank

Employees which urges the TUC General Council to pro-

duce a report on the "structural

unemployment precipitated by

these particular innovations

tion)"; APEX, the Association of

and Computer Staff which is

secking a one-hour reduction in

the working week each year for the next 10 years until the 30-

hour week has been attained:

and the Union of Post Office

Workers, which also calls for a

shorter working week.

fessional, Executive, Clerical

view. "The prerequisite is a the engineers on job security.

publicly-owned home elec-

up of preferential procurement

policies," said Ian Benson, a div-

isional officer for Tass, and

chairman of the NEDO working

in new technologies. Now that we have a State-funded

manufacturer in the NEB's

Inmos venture, if any US com-

punies want to get into the UK

as a market area, they should

have to use inmos as a second

but it should be built upon," he

Office maintenance engineers

up to supervisory levels, the Post

the forthcoming introduction of the Post Office's System X, and

its current TXE 4 installation as

an example of the "industrial

consequences" of new techno-

and System X worries, a spokesman for the POEU said:

There could be some major

problems when the Post Office

introduces these systems into the network and, while a lot of

money is being spent on System X research, the human side of

the situation seems to have been

who is concerned with the in-

may arise from the implementa-

The Post Office, however, de-nied that this was so and said

Extended

memory

tion of such technology."

The Post Office has nobody

Commenting on the TXE 4

"Inmos goes some of the way,

Representing 125,000 Post

"With this we can then phase

LETTERS TO THE EDITOR

involve the user at all stages

and as a purveyor of project management systems. Most of the DPMs I speak to are in-Users often request a new

Complex

ARNE RHODE (Letters, July 27) disappointed me. De-terbing himself as Complex he-omitted to include a middle in-ting, surely this should be "!". Prinsips, as an eleptronic engin-ter he can be forgiven as He probably uses the imaginary

Thurston Software Consultants

tions below strength in systems and programming, the user and DP should first justify that a new system is viable, investigate all possible alternatives and realistically estimate the total development costs before comdevelopment costs, before com-mitment of precious DP

resources is given.

Having agreed to the cost and timescale of the development the user should be informed of progress, and what better magnetic than time (man) mechanism than time (man/ woman and machine) recording with cost breakdowns and charge back details for the user?
If DP involves the user at all stages it will get his commit-ment, enthusiasm, acceptance and subsequently his money be-cause he is satisfied.

Marketing Manager ASI Management Services Ltd,



Speeding the ambulances

duling is being used by the South Yorkshire Metropolitan Ambu-lance Service in arranging over 2,000 ambulance journeys a day for the Doncaster, Barneley,

Rotherham and Shofflold arcas.
The £40,000 system, which estures a Data General Nove 3 minicomputer and six ADDS Regent VDUs, supplied by Ter-minal Display Systems of Black-burn, provides schedulers with access to a constantly updated

erably to reduce the normal sche-Based at a nurpose-built can tre in Fairfield, near Sheffield, the system will also provide hospitals and clinics with a daily leg giving advance warning of patients

motion, and is expected consid-

Our ploture shows an ADDS Regent 100 VDU being used by a schedulor at the South Yorkshire

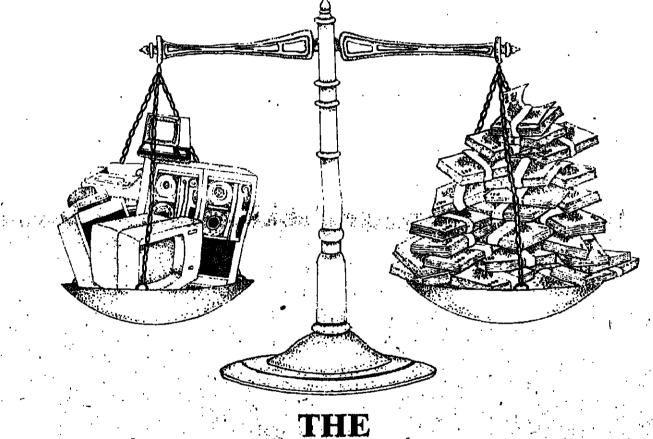
Japanese relax guidelines

November 10, 1977), MITI, the Japanese Ministry of International Trade and Industry, is to relax its rigid guidelines for the national computer manufac-

Miti is responding to foreign criticism of its policies, but also accepts that its rigid direction of industry has been only parially successful. It will now take

A significant failure has been the "shot-gun marriage," be-tween Fujitsu and Hitachi which was intended to force the two manufacturers into close collaporation but has in fact resulted in Fujitsu and Hitachi com poting as fiercely with each other as with IBM.

The entorced marriage between NEC and Toshiba was marginally more successful, but came too late to save Toshiba which has now thrown in Its hand and ceded almost all its mainframe interests to NEC in return for an equity stake (CW,



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Huckfield (left) is above the MP Experimenter by Navabi. Minister sees ERA's MP...

mation is available in the South Korea link for AM

the Airport station.

Heathrow Airport station at it THE Focus piece on charging system with scant regard for the out (CW, July 27), has annoyed effort required from the DP area. oth as a 13-year DP man

cluding a charge back mechan-ism in their time recording sys-isms because they realise that "If a company requires a new application then! it must be of value" is just not true.

KEVIN J. O'MEARA

PEOPLE

Unilever Executive for data services

services division has been formed at Uniever Computer Services. It will became sales manager in 1973.

the chaired by Len Rawle, who is chairman of the company.
Head of national marketing Ranald Bain; Ray Teo, who is head of Unilever marketing, and Frod Moyden, head of the computing division, are the other members of the oversulve.

Moyden is also a founder member, and was operations manager of the Unilever Research Laboratory before becoming head of the computing division.

Appointed data services development co-ordinator with UCSL is the oversulve. ment co-ordinator with UCSL is Roger Tomlinson, previously in

Bain joined UCSL soon after its formation in 1970, from Plessey, and was appointed antional sales manager in 1973.

from the University of Aston where ha was a lecturer in Maths and Computing.









We're having a Ball!

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CHARITY BALL

Friday October 13

at the Royal Lancaster

Computer Weekly is holding its third annual Charity Ball.

Last year more than 600 people attended what has come to be regarded as the computer industry's big night out.

This year the Ball will again be held under the patronage of

the British Computer Society, on the eve of the Society's

21st Birthday

Proceeds will once more be devoted to a charitable cause

within the computer industry. So why not help us to help

others, and at the same time enjoy a pleasant evening with

friends and colleggues

Moyden is also a founder member.

sales. He joined the company in 1970 from the University of Aston where

New address for IDPM

This week the institute of Data Processing Management moved into its new central London leadquarters at 12/13 Henrietta Street, WC2. The offices have no telephones because of the overtime ban and work to rule by Post Office engineers and for the time being the in-stitute may be contacted via the former DPMA offices at Maidenhead, tel 0828 28878.

Bob Horrobin, Mike Bramley, Tony Burgess, Gopal Brar and Jim Barnes are the directors of Pentagon Computer Services, a software house recently formed in Winsford, Cheshire. Horrobin was previously a senior project manager with Data-skil; Bramley and Burgess were consultant programmers with Arc Sys-tems; Brar was a programmer with Data Logic; Barnes was a freelance

sales manager in the desk-top sys-tems group at Hewlett-Packard, has joined Engineering Computer Ser-



Bill Bignell of Four-Phase Systems has been promoted from Southern region salesman to sales manager in

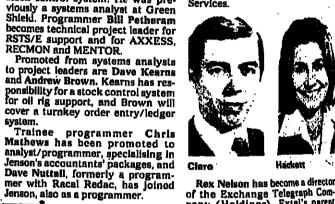
Anthea Bailam has joined A. B. Saunders, the data processing PR consultants, as a press and PR executive. She was previously press officer of Univac, and before that was a writer with Computer Weekly.

man with Data Sciences International, has moved to Logabax as a salesman in the North of England.

Michael Causer becomes en-Line. She will set up a personnel function following the company takeover from the Atkins Group by gineering manager of Compeda Inc, the US subsidiary of Compeda. He was previously with Isopipe Ltd. Raymond Kush has been appointed technical representative, based in San Francisco. Formerly he was general manager of Apollo Technology for the same of takeover from the Atkins Group by On-Line Systems. Previously she at up the personnel department for the Rapid Results College.

Two product marketing appointments at Atkins On-Line are thosed Richard Arkle, who was formerly in the Barketing and Barketin

David Rhys-Davies has joined sales and marketing with Rent Xerox, and John Clare, previously Jenson Computer Services as project leader for the implementation of a stock control system. He was pre-viously a systems analyst at Green Shield. Programmer Bill Petheram becomes technical project leader for RSTS/E support and for AXXESS, RECMON and MENTOR.



of the Exchange Telegraph Company (Holdings), Extel's parent company. He is a director of the Exchange Telegraph Co, a sub-



REPORTS COMING IN ON THE COASTAL EARLY



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AUGUST 21-25

Cybernetics and systems fourth international congress. World Organisation of General Systems and Cybernetics. Amsterdam, Details Dr J. Rose, College of Technology, Blackburn, tel: 0254 64321.

AUGUST 22-25.

of North American sales with MSI in

or North American sales with MSI in the US, He was previously a regional sales manager with the company. Aubrey Easterlin has become direc-tor of major account sales with MSI.

Group, Maldenhead, Details from Iain Sinson on 01-589 5111, ext 2700.

AUGUST 23-28

Siggraph 78, fifth conference on computer graphics and interactive techniques. Association for Computing Machinery, Atlenta, Georgia, USA:

AUGUST 28-SEPTEMBER 1

Righth Australian Computer Conference, Australian Computer Society, Cambers.

AUGUST 28

Jackson design technique, management tutorial. Marcus Bromberger. Dept of Computer Science, University of Straticlyde. Glasgow. 9:30. Details from the Continuing Education Office at the University, tell 64: 652 4400, ext 2132.

SEPTEMBER 4-8.

Medical Informatics Europe, congress. Ruropest Federation for Medical Computing. Cambridge.

SEPTEMBER 5-8.

Computer Federation for Medical Computing. Cambridge.

SEPTEMBER 1-12.

Non-invasive agridovascular messurements conference: NASA/Stanford University. Stanford, California.

SEPTEMBER: 13.

Computer programs for project control. sentiner. Association of Project Cambridge. 10.00. Details. APAs. 01.780 3182.



Complaint withdrawn

Finan, who was taking Northern Gasto the Industrial Tribunal on the grounds of unfair dismissal has withdrawn his complaint, for personal reasons. Mr Finan was sacked (CW, July 13) for printing biorhythm charts on the Northern Gas computer.

Stamp system

STAMP dealers Stanley Gibbons are using a 96K NCR 1-8250 computer with four VDUs and 20Mbytes of disc store to keep tabs on 50,000 stamps, coins, medals, maps and share cerificates which move constantly between four shops, eight security centres, worldwide whibitions and customers. The £57,000 system will also be used for routine accounting.

Turnkey contract

AUTOMATION for Whitbread's new Magor, Gwent, brewery will be provided by Logica under a turnkey contract worth over £250,000. The project is expected to take about nine months. The system is based on a Digital Eculpment PDP 11/60, running Equipment PDF 11/00, 14/11/10 under Logica's RPMC automation package, and also includes GEC Media data acquisition hardware and Ulbrich inteligent video terminals from West

Silence schemes

SCHEMES for the leasing and hire purchase of business machine silence covers have been introduced by the Power Equipment Co of Kingsbury Road, London, NW9. The rates start at about £3 a month.

For Finland

THREE hospitals in Finland have acquired X-ray scanners from EMI: two head scanners and one whole-body machine.
One head scanner is operating as part of the private health service at a Helsinki hospital, and the other two units are at the universities of Helsinki and

Basic tutor on Pet

ATUTORIAL program for Basic is available from Commodore for use on the Pet computer. Supplied on a cassette tape for just £9, "Basic Basic" is an inleractive tutorial system intended to introduce beginners to Basic programming. It includes fifteen chapters, six sample pro-grams, and "homework" assign-

Ti bubble memory terminal sales soon 'off the shelf' BECAUSE of the heavy demand corporate a bubble memory device cost about £2,000 each with bubble memory for bulk considerable discount for bulk orders. The 763 weighs 131b and

She asserts that micros are so

business will come," she says.

Her service, she continue

Diana sets up software

make it into a display, and set herself up as a software house. He

essor hardware in her front room, modified her television to

house in front room

prospective customers are mainly small businesses ne systems, stock control systems, and payroll packages.

Mrs MacKay's hardware is a SWTP micro system, which is based on the Matorola 6800

Paperback:

paperback publishers have joined together to sponsor a computer-based system for keeping track of paperbacks in



WITH its ploneering internal packet-switched network fully loaded, the National Physical Laboratory in Teddington. Middlesex. is considering Collaboration with outside organisations to create a new system, possibly based on the international X25 packet-switching

The present NPL network was designed and developed in-house, and made significant contributions to the basic technology of packet-switching. The NPL is considering whether to develop the new one independently, or in collaboration with someone in industry.

Possible collaborators would include Logica, which has experience in packet-switching, GEC Computers, which has shown a growing interest in networking as the Post Office's Experimental Packet Switched Network EPSS has progressed, Ferranti, whose Argus 700 com-

erable networking experience, minicomputer with a second on much of it on Digital Equipment minicomputers.

The present NPL network is cluding almost every model of perhaps best known for the Scrapbook information retrieval range except the largest. system to which it provides As well as Scrapbook, the access throughout the network is extensively used for the NPL-developed Edit interacaboratory. This was developed by NPL on a CTL Modular One

tive service for laying out text. ninicomputer, and the software A facility has been developed is now marketed by Triad Comto enable broadcast Teletext puting Systems, and has been services to be displayed on a computer terminal, and the netsold to the EEC Commission, work has been used in several where it is running on a Siemens pioneering experiments on in-7.738 mainframe (CW, March 3,

standby, and currently has 30

different machines on it, in

Amdahl 470Y/7 for Canada

THE first order announced outside the US for an Amdahl 470V/7 supercomputer has come from the Canadian government, which will pay \$4.8 million for the machine. The V/7 is significantly more powerful than IBM's top-of-the-line 3033, and is to be installed in the taxation office of the Department of National Revenue and Excise in the Canadian capital of Ottawa. The first V/7 built is on its way to Western Electric in Illinois, and another will be delivered to American Airlines in Oklahoma shortly (CW, August 3).

processor chip, together with a Midwest Scientific floppy disc drive. She writes all the appli-cations software in Basic, using a disc operating system sup-plied by Midwost Scientific. One of her first contracts was for a system to handle a mailing list of 35,000 names and adlist of 35,000 names and addresses, together with customer data, producing labels on a Centronics printer. Another early product was an information retrieval system that could find any one of 1,000 records stored on the floppy disc within three seconds. Diana Mackey is 34 and has a Diana Mackey is 34 and has a five-year-old son and a tenmonth-old daughter. She took on MSc in computer science at Bradford University and has worked as a programmer and a systems analyst for various firms in South Africa and London. She has called her firm Microsoft (not to be confused with CAP Microsoft Ltd) and feels there is an ample market for her wares. **ElectronicsWeekly** cheap now that people will not want to pay big consultancies' prices for software. "I am confident that the will particularly benefit the emailer businessman who can-not afford the outlay for a large computer but wants things at his fingertips." مِلْدًا مِنْ الْمُعِلِ editor and a file management

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EVER HEARD OF A

763 and 765, which were introthe 765, with a built-in acoustic coupler, 171b, Both units, designed as portable terminals can have up to 80K bytes of nonduced last spring (CW, April 28, 1977), there has been considerable delay in meeting orders in ustomers with machines for volatile memory and software, evaluation. In the US terminals stored on ROMs, includes a text

have been available for some time for immediate delivery but in the UK no orders have yet been fulfilled.
Now, however, David Monk, UK marketing manager for the European Digital Systems Division, says supplies are coming in the expects to be able to clear the next month or so. New customers are likely to have a four

to eight week wait but it is hoped that in about six weeks sales will be virtually off the Monk says Texas has received

ddukts on tile marker to in-

cnase BRITAIN'S thirteen leading

print.
The Paperback Stock Control
System, to be developed and
operated by the Gordon & Gotch ione jurative contracts worldwhis for the terminals and that
there is a large number of booksellers with a master card subjects in the UK in file describing all current titles.

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Carl Machover, Bert Herzog, Derrick Regent Centre Hotel in London from Sep-Grover and Kelth Tricket will, with others, tember 12 to 15. Full details are available ments in graphics hardware, software and Middlesex. Tel: (0895) 39262. pplications, in the US and the UK, at a Here Sydney Paulden reports on the four-day seminar staged by Online at the rapidly expanding market.

present the latest trends and achieve- from Online, Cleveland Road, Uxbridge,

Market explosion in graphics has begun'—

puter graphics, that so many people had hoped for, has now definitely begun."

Note that so many only \$1,000.

While such made in hard

ures. "In the last 18 months the market has expanded so that market has expanded so that most manufacturers in the field have had over 100 per cent growth in that time. I'm not talpect them to grow rapidly. No, i'm talking of companies that have pushed their graphics turnover from \$16 million/to \$35 million. That is significant.

Machover is president of Machover Associates, a graphics consultancy, consulting editor of Computer Display Review and a former president of

While such progress has been That is the firm conviction of software experts have not been carl Machover, one of the slacking in the US. There have leading graphics specialists in been important moves to ratio-the US. He backs his opinion with figapply packages on different

king about small companies just to keep on reinventing the getting started. You would expect them to grow rapidly. No, the point where graphics soft-

much wider range of applications, domand is therefore increasing, and it is becoming standards Planning Committee, ing. It is a valuable tool for production of graphics equipment in volume.

"Anyone planning new facilities or any manufacturer in the computer field thinking of new products must now consider the make proposals to standards or tools to be overhauled or graphics field," claims ganisations we have developed to the appointment as co-diagram in tion and any eye level, but data to be collated and accessed for can be collated and accessed for complete in the ACM SIGGRAPH Graphics costing and for materials order.

In Accessing and for materials order in the ACM SIGGRAPH Graphics continued and accessed for can

computer field thinking of new standards," he says, "but we can products must now consider the make proposals to standards of graphics field," claims sanisations. We have developed a terminology for graphics products used to require an investigation that could result in huge ment of \$150,000 to get started in these are accepted internationally then programs could

graphics in a scientific or en... these are accepted internation gineering computing environment, but it can now be done for seally within a country and across frontiers, independent of the hardware. Independent of the home-brew, do-it-yourself acomputing arena, One graphic tublet on the market permits the use a scribe to create the Online semiliar.

amateur to use a scribe to create. the Online seminar, any land of design on his own. The new generation of low wagging the dog.

HE market explosion in com- TV screen at home, in colour, for cost graphics units will certainly stir the British market in the near future. According to Kelth Tricket, managing director of Compeda, the NRDC marketing support subsidiary, Britain can teach the Americans a thing or

two in graphics software.

cash for computer power," Tricket points out, "we British have had to use smaller computers more cleverly." He cites several examples of graphics packages with really viable commercial, engineering and scientific applications that have been developed in the UK and are in advance of anything comparable in the US. There is the interactive graphics system ICON, being used for the design of the lattice structure of oil rigs; Gaellċ, a new system for integrated circuit design, devised by the Wolfson Microelectronics Liaison Unit at Edin

"Because of the shortage of

pplaced.
Derrick Grover, the NRDC Derrick Grover, the NRDC executive with responsibility for licensing and funding graphics projects in the UK, is gathering together Tricket and Pike and others of the calibre of Professor. W. S. Bliot of Imperial College, to ensure that the graphics or gress made in Britain will not be overlooked when the American experts present their know now at the Colline seminar in September "It could," says Grover "be a case of the tall enters wagging the dog."

Four-day seminar next month ICL shares climb after good reports

A SECOND stockbrokers' circular strongly recommends clients to buy ICL shares, following an extremely bullish report on the company from Laurie, Milbank (CW, July 27). This has helped to push ICL shares through the 360 pence mark and they now stand at their highest point since the degree of interest among institutional investional company was formed 10 years ago.

company was formed 10 years ago.

A. R. Bowden of Fielding, Newson-Smith, who wrote the latest report on ICL, has been an en-

French Transpac and European

sub-contract from SESA of

Paris, SESA, the main contrac-

tor for Transpac, is building

"The problem has now been

Euronet in partnership with

solved," a Logica spokesman told Computer Weekly. "It was the typical sort of

problem that one gets at the

as would happen when the main

switch failed. Instead of shutting

down, the failing switch con-

tinued to generate data, which

corrupted the data in the

three modules, each based on the Intel 8010 single-board

microcomputer which is driven

by the 8080. The three units are

the Group Unit, handling level 3 of the standard X25 interface;

the Synchronous Line Unit, for HDLC users; and the Asynchro-

nous Line Unit, which handles

character terminals.

No more hitches in

Euronet switch layed the opening of both the french Transpac and European able of catering for a greater variation of traffic demands Euronet packet-switched net-works (CW, August 3) lay in the CP-50 switch, developed by Philips subsidiary TRT under Telenet Processor switches,

which are also microprocessorbased, can be bought off the shelf and are already installed and working in the US and in London, makes it likely that the Post Office will select these for its forthcoming X25 network if the plan to get it into service late next year goes ahead. BETA, the Business Equip-

systems integration stage. It ocment Trade Association, has curred when the standby switch took over from the main switch, poured cold water on the Post Office's plans for a public packet-switched service. In a submission to the National Committee on Computer Networks, BETA suggests that a packet-switched service would standby."
The CP-50 switch is built up of penefit only a minor sector of network users, and calls instead for a basic circuit-switched network on to which packetswitching could be superimposed as a value-added service. BETA also wants moves towards an all-digital (System X) telephone network to be

Speaking about Euronet in Several line units can be the Commons last week, Minattached to each group unit, and ister of State at the Department several group units can be attached to the high speed ring bus through which a minicomof Science, Gordon Oakes, said that the network would evolve into a pan-European public data puter, in the case of Transpac transmission service. This has and Euronet a SEMS Mitra 125, been canvassed as a likely devemonitors the packet exchange.

This modular and flexible lopment but not previously stated categorically. Traffic structure makes the CP-50 a costs on Euronet will be less particularly powerful device for than £3 an hour.

The circular from Fielding Newson-Smith is particular complimentary about Ki management. "All the evidence points to the fact that Dr Wilson has take

over the managing directors role very successfully, and more so than one might reasonab have expected given the

that turnover for the year ending next month could read £493 million, doubling to the million by 1982-83. Pre-tex po fits should be about £37 milio for the current year, and cod reach £84 million by 1983.

Queen's applications

APPLICATIONS can now be made by companies wishing to be considered for Queen's Awards for Export and Technology 1979. Any UK based firm that feels it has made an outstanding contribution in either exporting or technology may

Several firms in or close to the computer industry wan Quent Awards in 1978 (CW, April 1) Among these were Control Data, Plessey Telecommunica tions, and Marconi Avionics British Rail won for export of computer consultancy services. There were 107 Export Awards in total, and 17 Technology

Closing date for this year applications is October 31, 1978 Forms can be obtained from The Secretary, Queen's Awards Office, Williams National House. 11/13 Holborn Viaduct, Lordon EC1A 1EL; telephone 01-22

Sydney To clinch his argument, he points out that IBM has now come to the conclusion that the computer graphics market is big enough to demand its full activation. He reports that within the past year? IBM has taken on the marketing of CADAM, a system developed by Lockheed, and in Cetober will be faithfully and its full and its full. Herzog is director of the University, and successive the said. It is microprocessor technology that is revolutionalizing the view of graphics. Lower he is also Professor of Computing Centre at the University of Celorado, where he is also Professor of Electrical in Has an every company that is revolutionalizing the past of the said. It is microprocessor technology that is revolutionalizing the view of graphics. Lower History of Electrical in Has an every construction of the said and in Component in a plant, down to the flangs and sponting and Professor of Computer Services of the past of the said of the said is from an every construction of graphics. Lower services of component in a plant, down to the flangs and sponting and Professor of Computer Services of the said is full in store, so that must ward a superior of the said is full in store, so that in the new accession was presented in the past of the said of the said is of the said of the said is of the said of the said is of the said of the sa

Menzies introduces a new range of products

A CHANGE OF name and a new product are features of a revitalised, effort in the voice response data communications was insufficiently flexible for tributor John Menzies.

Fraviously called WDC Computer said responsible for market putels and responsible for marketing the Wavetek voice response to the market.

The Wavetek agency was promptly snapped up by Racal-willso which now has marketing the Wavetek voice responsible for marketing the Wavetek products throughout Europe (CW don Hobby Computer Club is suit in the UR. Wilch come of large-companies notably will open to all comers in the UR. Wilch come of large-companies notably meeting will be on October with the backing of the Octob

A CHANGE of name and a new ment with Wavetek of San product are features of a Diego California, because it derevitalised effort in the voice cided the company's equipment

Hobbyists in London form a club

'What would my Granny have made of all this.....

computers waking me up, taking my orders

average scores. At the bottom of

vitamin B17 pill after breakfast.

seconds after walking. Jo is just

polishing off the remnants of

You shouldn't be

reading my diary, he

scolds, regretting

the moment of pas-

sion when he had

password which

granted access to his personal infor-

mation. One day, he

swore, he'd switch

over to the finger-

print matching

security system,

like that fitted to

the locks on the

Jo notices the print-out, which

his wife is perusing.
"You shouldn't be reading my

diary" he scolds, regretting the

divulged the password which

granted access to his personal

doors of the house.

divulged

by his wife Jan.

Twenty seven minutes and 11

for breakfast, supervising preparation of same....?'

One of the special prizes in the

Dataskil/Computer Weekly essay

competition, Computerstyle 2000, was awarded to Anthony

Thornton, of Derby, who works

for British Rail. His winning essay

appears below. In it he describes

the projected lifestyle of one Jo

Bradley who, having reached the

Jo Bradley opens his eyes, yawns and halts the sharp ring of the alarm with a spoken command. It is Monday morning. Monday April 23, Year 2000, time 8.00am, to be precise. Jo Bradley is reminded of these facts by the date/time display situated on the wall opposite. Turning to face the microphone by his bed head, he speaks de-

"Break-fast-Em-Three." "Accept," responds an anonymous monotone voice.

Jo turns back and smiles as he visualises the house computer directing the automatic handling device downstairs; the luter slowly traversing the racks in the kitchen until the prepacked breakfast M3 is located, now transferring the aluminium container and retracing its path before gently placing the break-fast in the processor-controlled

"What would my old granny have made of all this?" thought

"Computers waking me up, aking my orders for breakfast nd supervising preparation of

"You lucky creature!" he says aloud to his wife as he gets out of

First in the bathroom, Jo decides to make use of his latest acquisition — a physical condi-tion tester. He'd been pleased to add this capability to his house computer some weeks earlier. After all, he was in his 54th year and wasn't it a perk of his thriving business — selling, installing and maintaining persothe benefits of the latest hard-

ware on the market?

"I'm not feeling quite 100%" shoulder, he scans his usyhe muses. Monday mornings appointments. Just two
straightforward installation
straightforward installation
left over from the hever change.

Jounhooks a speaker from the jobs, left over from the jobs is the jobs of th gleaming plastic cabinet.

"Jo-seff Prad-lee" he mouths, in he same tones he had used when ordering breakfast. A stored message flashed across the now lituminated visual display unit, promoting to to proweekend. Being Monday, there would be many more in addition to these on the files at his shop. Everyone, in theory, could send business messages direct to his

this facility to special friends. He insisted on-separating work and leisure. For Jo, home was leisure. "Can you send 'sis' a birth-day page?" Jo asks noticing the relevant entry on the print out. "One of those you made your-

home, but Jo would only allow

ne now illuminated visual display unit, prompting Jo to provide hair, prompting Jo to provide hair samples to the appropriete receptacie. Some minutes pass, while the results of analysis are digitised and communicated along with Jo's amperature weight, blood pressure and rulse rate to his lessons, computerised medical record, one day, perhaps sooner, leshaps later, this information With a fond farewell. Id departs leaving Jan to scan her small selection of greetings pages. Soon she halts the VDU

master NHS files. On this morning though, the system merely responds by displaying a mass of numbers representing the numbers, representing the results of Jo's current condition alongside weekly and monthly

on a display of English flora, ter, the system of submerged the screen, a message insists quite appropriate for Jo's transponders is regulating and that Jo is not to consult his local American sister. A swiftly com- routing his journey-to-work hospital but is to swallow a posed message, and a matter of through the city streets. He has seconds would elapse, before the page would reside in the files of electronic mail 3,000 miles away. waiting to remind "sis" of the

breakfast M3, when he is joined "Good morning, dear. Don't lorget your pill" she teases, with a mischlevous grin.

age of 55, is to start a four-and-a-

haif day week, then four, three,

ultimately retiring from economically active life at the age

The essay of the remaining

special award winner, Paul Hol-

den, of Dublin, will be published

Politics - Results of your vote on last night's bill — p 101.

Sport — Glenrothes clinch

Timesview crossword. (retired) of Worthing in 7 min 41

the corner of the kitchen near set about a variety of domestic chores — cleaning, bed making, moment of passion when he had formation. One day, he swore, co-operative effort: Besides, he'd switch over to the fingerprint matching security system, like that fitted to the locks on attempts to discriminate re astrous.

Chores complete, Jan has the rest of the day to herself. What to do? Replenish stock of food. No warnings from the house com-

Andy can do that Reset the décor on the lounge

Design some more dresses. Manipulating the light pen gets so tiring.
Play "acrabble" with the computer. Not today thank you.

Visit Mary. Jo in the meantime is enjoying his drive to work. Having previously keyed his destination, his shop, into the car's transmit

by his actions, have been time to reflect. Another year or automatically restored to their so before he and Jan would enter preset control values. All seems a new phase of their lives perhaps the greatest social ben-cfit of all those attributable to

puter terminal; in travel not

transport, in art not account-

ancy, in crafts not chemistry, in

recreation not theology, for

miss out on some things."

usic not mathematics, in

oing not dozing.
"Yes" thought Jo, "Gran did

The shop is a large and roomy

property near the city centre. Jo

demonstrations of computers

and associated equipment.

stallation and maintenance

requirements, Selecting the two tasks he had seen earlier, he delegates the remaining liczen

could send business

messages direct to

his home: but Jo

would only allow

this facility to

special friends."

"Starting your active leisure

or so to his partners.

On her second cup of coffee the "era of high technology." At the age of 55, he will begin spending less time at work, at first a four-and-a-half day week.

place in European Cup — p 274. Crime — Decrease in robbery. increase in fraud continue - p

She moves the display down the hierarchy of pages to the Today's winner — Lt Col Bird

"Some folks are setting a cracking pace this morning thinks Jan, "best get started about the house... Andy!" The small robot skulking in

the electric socket, stops whatever it is doing and follows Jan into the lounge. Together they washing, pressing and the like. Many younger women specified the day's tasks to Andy-like robots and left them to it. Jan had always found this process time consuming and preferred a with an untidy husband like hers, Jan had found Andy's early from valued articles quite dis-

Jo grins somewhat self Evaryone, in theory,

puter, leave it until later in the Spray weed killer on the lawn.

wall. I quite like our present lighting pattern.

It is the middle of the after-noon before Jo is nearing completion of the second installation of the day — a microprocessor control system for his friends greenhouse. Testing the system is somewhat amusing. Windows opening and closing as Jo shields the sunlight from first one sen-

water spraying as he wipos wafting past as the temperature falls; acidity on a further sensor triggers an alkaline drip; on anther, an acidic one. He checks the graphic monitor, seeing that the parameters defining each plant's environment, disrupted

well. Too late to return to work Jan is a little surprised to see .lo home early.

"What did you do today?" he asks.
"I walked to Mary's "the and back," Jan looks pleased with then four, three, ultimately retiring from economically active life at the age of 60. herself, her normally pallid complexion showing the wel-Concurrent with this run come benefits of fresh air and down at work will be a phasing-

in process of education as pre-paration for active leisure. "And you?" "Oh very busy dear," responds Jo, in a sardonic tone, "that's Education - much of it acquired through the home comwhy I'm back early."

They settle to a light tea in front of TV in the lounge. One of those electronic mail-order sales programmes, which are so popular nowadays, is in proress. Jan is beginning to show interest in the clothes being modelled, and so is Jo, when a message, via telephone line and home computer terminal, appbelieved it had seen service as a supermarket in the past, but screen. Only messages from screen. Only messages from now it is alive with working' sources to whom Jo has assigned priority will effect such

Squash court available, 7.30 which Jo sold to the Sounter pm.
public. 'Nodding to his counter pm.
"Shall we take it dear," Jo which Jo sold to the general

an interruption.

staff in passing, Jo picks up the "Shall we take it print-out detailing the day's in- asks."

the club, afterwards," came the bargaining reply. . Jo does not need second bidding where squash is concerned.

He is through to the club's reservation system in a matter of seconds, lust pre-empting his friend with the greenhouse. although he does not know it. Court and dinner table reserved.

> Many younger wo-men specified the day's tasks to Andy-like robots and left them to it. Jan had always found this process time consuming and preferred a cooperative effort.

the Bradleys turn their attention to the menu in front of them. It does not take long to make their choice and transmit it to the restaurant. They often dine out these days, finding it both cheap and efficient compared to some

years previously. They prepare to follow hard on the heels of this last message. It is Tuesday morning, Tues day, April 24, year 2000, time 0.01 turns to the microphone by his

"Alarm, eight am." he com mands, drowsily.
"Better make it 7,45," says

Mascot as standards?

obliged to adopt it. A consul- nance cycle. tative document describing the new proposal is due to be published in a few weeks, according to informed sources.

Software Construction Operation and Test) was originally developed as an aid to applications development based on an Algol 68 environment. It was subsequently adapted to suit the UK standard for real time work, Coral 66, with the assistance of Systems Designers (CW, November 17, 1977).

The system currently includes a real time executive, a development and documentation methodology, and optional extensions to the official Coral 66 standard. Highly regarded by existing and potential users, in-those who have used it, it is said cluding the British Aerospace to offer major advantages throughout the software design.

Association, an informal grouping of those interested in or experienced with the system Mascot (Modular Approach to already includes Systems Designers, Software Sciences, Scicon, and Logica on the software side, and Ferranti and Marconi as hardware suppliers.

An indication that more widespread use of the system is anticipated was provided by a lunch given in London last week by Infotech International Intended to launch a two-day infotech tutorial on Mascot scheduled for October, the meeting was attended by senior representatives from the Mascot Suppliers Association and from Corporation and GEC Com-

THE task was simply this. I was presented with three positions known to be won for the side with the rook in a battle against a lone knight, and I was to win them. The diagrams R1, R2 and is how the play went from each.

R1\$12 Ka4 \$d1 3. KcB 4. R13 5. Kc5 Ka3 Sa4 + Ka2 Sb2+ 11. Rg5 12. Kg3 13. Kc2 Sc4 + 15. Kc3 16. Re5 17. Re6 18. Kd2

812

Sh1

Ka3

'resigns

21. Rg4 22. Ke3 23. Rg1

20. Rb4

R2KtB

K13:

Question: Was this a straight. That's not like tournament and computer?

and naturally I prepared for the was between a chess analyst and

Guest Chesslab

to compete under tournament constraints

gainst an end game program (CW, June 22).

observer. Here, John Roycroft himself reports

A few hours before Viktor Korchnei made the Diagram 1. Readers should have little trouble filling in the gaps. K=king; R=rook; S=knight first move against Anatoly Karpov in the well (Why S for knight? Kt, used to avoid confusion publicised World Chess Championship in the Philippines, a somewhat loss highly charged with K, is clumsy and N is shared with no other country. S is for Springer, the German for the confrontation took place in London between a sub-optimal chass player and an optimum data-John Roycroft describes himself as a base. Only four chessmon were on the board set up at Queen Mary College, Mile End, when John Roycroft took up the invitation of Donald Michie

generalist working for a leading multinational manufacturer of hardware and software. He has published a book on end game studies, Test Tube Chess, 370 pages, 470 diagrams from the author at £4 plus 54p postage (a No 2 Jiffy bag wiff speed delivery). Roycroft also edits a quart-erly magazine, EG, which is devoted to the same Michael Clarke acted as arbiter, operating the teletype terminal, while Donald Michia was subject. The annual subscription is £4 and details not the names of the chessboard squares tails may be had from A. J. Roycroft, 47 New

A: Consider the position after 8.Rh7+. (See R2.2). Where can

Black play his king? If he goes to

e8 or to f8, the knight is

immediately lost to a rook check

on h8. If he goes to g8, however,

the rook plays to c7, winning the knight by domination, since it

has no safe squares. The same

apparently wide choice, Black

really has only e6 and f6 to

choose from. But even c6 fails to

Rh6+ and the variety of ways in

which the knight is now caught

in just a few more moves is quite

do for Black in R2.2. The effect,

in the mind, of comprehending

each of these variations in-

dividually, and all of the varia-

tions as a group, is strongly

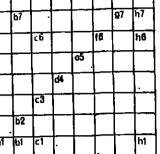
made no mistakes (to everyone's surprise, including my own) and

if was remarkably easy.

O: Was that the end of it?

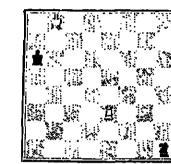
R4: See text

ghtful. So, really, only f6 will



By John Roycroft

Fine fight with no histrionics



R1: White to play

E .

R2: White to play

contest. In chess terms it was a database, not between an more like having an adjourned

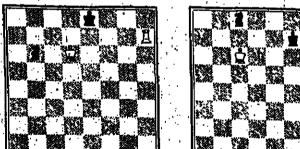
Q: How did you prepare? A: I was already familiar, withanalyst, myself, could not comout being move-perfect, with ending. Then, I had learned a lot from playing against the same database at the April two-day conference in Edinburgh (CW, May 25). Thirdly, I asked for and was given in advance, four positions (and the single-line optimal play) with the same positions, so that I could have

some training that was relevant.

O: I notice that the solutions are

all 24 moves long. Why is this?
At Professor Michie had them

distinct from each other. chosen at random from the 178



such positions, with the idea the near-maximum length solution exceeding 27 moves) and the number of such post-

R2.1 See text

and computer?

Answer: No: True, I did play with a clock (at the rate of 16 moves per hour, the equivalent of tournament chass and its 24 hours for 40 moves), and I did not have any moves back. On the other hand, I had had over a week's notice of the positions, and naturally I menaged for the was heaven a chass and list and the same l

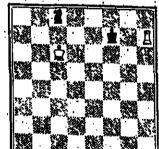
over-the-board master and a Q: Can you be more specific? database, so the conditions were deliberately made to ensure the

In all cases White captures the black knight on his 24th move

Q: Coming to the play, is not the solution to R3 very similar to

that to R1?
A: Yes, it is. In fact, it's a mirror onwards. We were all surprised at the lack of variety, certainly the apparent lack of variety, in the core of the solutions. Even R2 was like one of the positions given to me in advance, and the RI and R3 lines were not new to me. But R1 and R2 are quite

Q: So, were you not just reading from your paper database while



the computer was reading from its magnetic one? A: Almost, Of course, I had to be sure, and had to be able to recognise a similar position in

Itons.

Or You played with a chess clock to measure your thinking time might have diverged, by selecting an alternative, equal depth move at many possible branch of compromise between overlation. That's very fast, lan't it?

At Yes, Or rather, it seems at In fact, my preparation was pretty good, and most of the difficult inoves I had already written found in the practice positions.

Or You played with a chess clock tion. This was a mental not a three more positions to be given to me without preparation. Here more positions to me without preparation. Here in measure in the more positions to me without preparation. Here in move at many possible branch of compromise between overtie-board competitive play and how the analyst works.

Or And what happened?

At Exactly the same result, it made no mistakes (to everyone's surplies, including movers).

Q: Which of the three positions you played would you call the best? you played would you hear?

Dest!

At R2 is quite beautiful. And it would transpose into solutions sen would transpose into solutions avoid transpose into Of How do you mean?

A.i. Assumed that the positions would transpose into solutions that I siteatly know in indeed, into the essentially different RI and R2 lines or into one of the Edinburgh lines. And they fill Or What about an inversible

in R1, as near as makes no dif-

Q: How many moves back did you have in these three "unseen" positions? A: None. It turned out, so Michael Clarke told me, that all the moves I made were optimal. That is, no moves I made pro-

longed the solution unnecessar-

A: Donald Michie thinks that it ought to be possible to construct "expert system" that will play the ending in a non-look-up manner. He was interested in now I tackled the contest.

Q: And how did you? A: By looking for patterns. For instance, the play in all these long-solution positions seems to fall naturally into three phases. In the first phase the chessmen are relatively dispersed, but Black must get his king and knight together, or perpetually threaten to. At the end of this we applies to the move of Black's enter a second phase, the kernel king to g6. So, in spite of the struggle, where a sequence of a dozen or so moves decides it, because eventually the knight is forced away from its king. Phase three mops up the knight. Of course, mate threats operate in any phase of the struggle, even in all phases.

Q: This phase two is the most A: I certainly think so. There should be a closer look at the database to verify our conjecture about the limited number (three) of distinct "second phase" move sequences. It will be very curious, but it seems a definite possibility, if the patterns of play are different with different solution lengths. To be sure of this will require a

great deal of work. Q: Why aren't all positions at the "maximum length" of solution?

A: What is most relevant is a osition without antecedents or ancestors. The way the database was constructed, backwards from all terminal positions, ensures that the White moves are the best (win fastest) and the R3 and R8.4 Blatk moves are also the best asked for (delay the win longest, or seize a draw). This process, pursued for all possible positions, over three million, allows a table to be constructed showing how many positions exist for each possible length of solution. Consider diagram RI, it's White to play, so Black moved last. But, aside from the possibility of capturing some fifth man, there is no previous move a valiable that is a best move — that is, all possible travelous moves to that is a best move.

praylous moves (moves leading to the diagram) are bad, in the sense that alternative moves are available that will draw. Therefors the backing-up procedure by which the program has generated the database; is at an end for this particular sequence it's the end for the program, but the beginning for the player.
Naturally, these, no ancestors'
pastions arise at all move-

The third study, of the nect for new conversion tools, is to begin with a review of current tools, available or under deve lopment, and will go on to make proposals and recommendate

study From front page

such as that envisaged b. Codasyl's COSCL committee (CW, March 16).

pleted within one year and have peen allocated budgets of 89,000 Accounting Units, 120,000 AU and 71,000 AU respectively. Accounting units are currently valued for UK purposes at about

The director of the Computing Services Association, Alan Ben-jamin, who welcomed the studies as focusing on imponer problems and future opportu ties, said that at least six UK software houses intended to submit tenders.

The only company willing a confirm its position as a bidden was Software Sciences, which has joined forces with two European partners, Softwar Sciences has in the past devi loped its own system implemen

tation language, Slan. Systems Designers would neither confirm nor deny that I was preparing a tender, and but Logica and Scicon said that they would not be bidding.

Portability was one of the major project areas identified by the Commission nearly three years ago, as part of a comprehensive plan for the European computer industry (CW. October 16, 1975). A survey of Cobol portability and the need or standardisation is already under way and should be completed shortly (CW, November

order to do so".

A relatively short period has been set for the preparation and evaluation of tenders, which are due to be returned early in Sep tember. A decision pe about four weeks will then for low, after which the successfu contractors will be expected to start work immediately.

Considerable flexibility ha

No licence is required from Department of Trade for exper compliance with the Ur tions mandatory embargo on we sale of arms to South Africa, to export licence would be require for the sale of a military con

gory.

ICL declined to ack customer. It merely

South Africa is one of the co sidiaries, and has the bigging installed base of large scale 2900s outside the UK.

Software

for the development of nev

All the studies are to be com-

24, 1977). The Commission notes that in none of the areas does it wanto conduct a limited survey of the existing state of the art. Ruber wants to achieve a "better understanding of the ways and neans by which a working porlability of programs may be obtained and of developmen which could be envisaged i

been, allowed to potential contractors, who may bid individu ally for any or all of the studies

machine

of general-purpose compilers from the UK to South Africa in puter, but a general purpose machine for the civil police would not fall into this cater

the order, saying it did not do so without prior consent from the that it does business with an country with which trade i

legal under UK law.
There is a growing movement in Black Africa, led by Nigeria, to cease trading with any combined to cease trading with the cease in the cease trading with the cease in the cease trading with the cease in the cease trading with the pany which does business South Africa; however ICI pany's two or three largest fastest-growing overseas su

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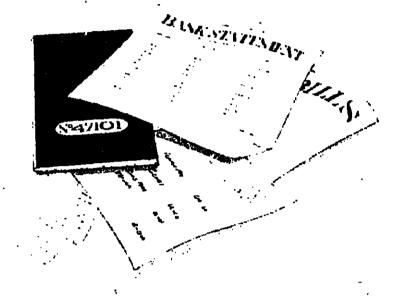
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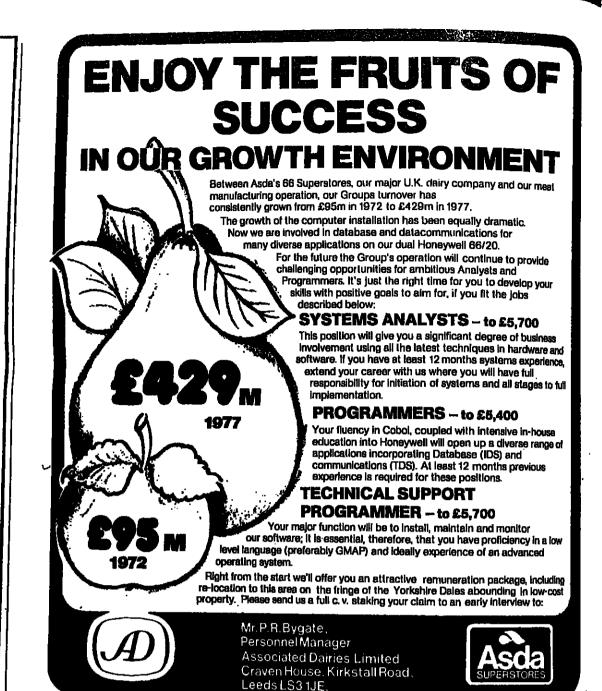
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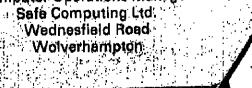
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The current twin ICL System 4 computers are to be replaced in mid 1979 by dual ICL 2980 computers as the first phase of enhancement of the instellation.

The opportunity has arisen for trained computer staff, who are keen to be involved in these important developments, to join the Board, and applications are invited for the following range of note:

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Applicants must have in excess of two years' COBOL

Applicants must have in excess of two years. COBUL programming experience together with practical knowledge of an essembler based language. Experience in communication system programming will be an advantage. Salary for posts Ref. No. 266/78 and Ref. No. 267/78 — 64.680 per annum (inclusive of productivity payment) rising to 66.130 per annum (by annual increments).

Applicants should have two years' COBOL programming experience and be interested in developing the element of systems design experience within the post. Consideration will be given to applicants who have less than two years' COBOL experience but have had eystems training.

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ADVERTIGEMENT

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SOFTWARE PROGRAMMER

63933/65746 + 6312 p.a. supplemen

Required to provide actiwate support for the Prime 400 Compute. Outles will include installing and writing new system soliwate and ossisting applications programmers. Experience of mini-computers is desirable, although this could provide an opportunity for applications programmers who wish to transfer to systems software.

SYSTEMS ANALYST/PROGRAMMERS TWO POSTS) -- £3933/£5745 + £312 p.s. supplement

To essist in the development of a wide range of technical systems and management information systems for the technical sections of the GMC Ideally, applicants should have a Degree and several years of programming and several years of programming experience, preferably using Portran.

encing selery will depend on age and experience, elihough ints with limited computing experience will be considered but at the considered by the considered but at

Conditions of Service include removal, legal, etc., expenses up to £756 and lodging sllowance.

Applications by letter giving full details of age, experience, qualifica-tions, and salary and the names and addresses of two releases to its County Personnel Officer, County Hall, Piccadilly Gardens, Magchaster MGC 3HP by 25th August.

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up to £6,000 Our client, an international computer services organisation has opportunities for staff to join project teams developing commercial systems. Applicants should have a minimum of two years of programming in COBOL. PL/1 or RPG2 in a commercial applications environment and have been involved in the design of at least one system. Knowledge of terminal and real-time working would be an advantage.

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.C5,500-.C7,500 A major British engineering and construction company has retained JBA to recruit Systems Analysts to strengthen their financial systems team. All applicants must have worked on financial systems, and for the Semor positions, a minimum of four years relevant experience is expected. The less senior vacancies would commence at salary levels of c. £6,000; Analyst/ Programmers looking for a move into full systems analysis should have a minimum of three years D.P. experience.

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Closing date for applications. 25th August, 1978.

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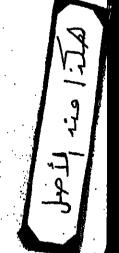
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previous supervisory experience will be an advantage. The successful cendion will normally have had at least the years' experience of Systems Author in a commoncial environment. The starting belief will be within the range C3.189-C8.178 or C5.93-E7.308 and will be dependent on qualifications and experience. \$6.19

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We are in the process of expanding our computerisation programme in the U.K. and now each to fill two key positions to strengthen the mechanisation project team.

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The ideal candidate will be applicant to the process of expanding our computerisation programme in the U.K. and suitably qualified applicants are invited to apply for the following neetilons:

The ideal candidate will have a minimum of 2-3 years' experience of systems shalvels and design. This must include the implementation of at least one significant computer system. While programming experience would be an advantage, an O&M background, prierably in banking, is assential. The position will report dijectly to the Systems Manager and should afford considerable variety from one project to another. The successful candidate will have ample apportunity to progress towards becoming an all-round system designer of high quality.

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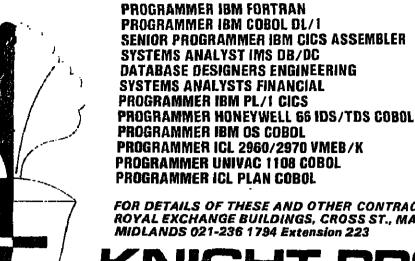
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Writingler, one of the world's leading manufacturers of leisure west, want to differ an interesting job to an enthusiastic professional who has at least 1-2 years' systems and programming expenses in a commercial environment. You must have a knowledge of Cobol of RPG and any experience of on-line systems could be a masklet

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FOR DETAILS OF THESE AND OTHER CONTRACTS, PLEASE CONTACT MR. PERRY BUTLER, 143-144 ROYAL EXCHANGE BUILDINGS, CROSS ST., MANCHESTER M2. TELEPHONE NO. 061-833 9341/3. MIDLANDS 021-236 1794 Extension 223

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Applicants stiguid preferably have a sound impovided or systems analysis in local government and programming in COROL. Consideration will be given to housing accommodation and a perior out urbance allewance schoole is in operation.

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Applicants for the Programmer posts should have a minimum of 18 months' similar experience. Appropriate training would be given to outstanding candidates for either post.

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PROGRAMMER

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* Highly progressive organisation

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Our client, a major British insurance company in South-East London, seeks an analyst programmer with at least 12 months' analysts experience. They retain ICL 2960 using COBOL although they will consider people with any hardware experience. Ideal applicant will preferably have some insurance experience. Company offers.—

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Relexed picturesque surroundings not too far from the beautiful city of Oxford (Due to the

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Above average terms and conditions including

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PL/I PROG

Oue to expansion and to cater for future needs, this well-established D.P. services division retaining IBM 370 with extensive T.P. network.

eseke PL/I programmers with minimum 2 years'
exp. Company offers:—

* Continuous development of both commercial
and financial applications

* Opportunity to learn CICS and Database

techniques

* Promotion prospects within a progressive

organisation

* Excellent perks including STL5, staff restau-

★ Salary £6,000

SYSTEM ANALYST

Our client, a prestigious Merchant Bankers, are seeking a Systems Analyst who has either finan-cial or insurance experience. They retain IBM 370 under OS but will consider other hardware

Company offers — * Full banking benefits including subsidised

mortgage * Excellent working environment

Computing Services Association

Suest.

Job security with preatige concern Selary £7,500

REF. 1694

SENIOR

* Salary CB.500

PROGRAMMER

Company offers: — Variety of new development work

house prices

* RELOCATION expenses

Flexi hours Beautiful rural surroundings with reasonable

CAMBRIDGESHIRE

SURREY

REF. 1872

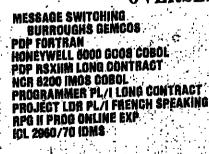
Our client, a manufactuer of high precision instruments, situated in the beautiful rural surroundings of Cambridge, seeks a senior programmer to work on newly installed PDP it under RSMII and BASIC +. Ideal applicant will have at least '2 years' experience of BASIC or BASIC +, company will consider other MINI hardware experience. A major organisation in the retail trade is now pursuing further interests at a rapid rate. Retaining NCR Century equipment with new Criterion V 8580 scheduled for delivery at the end of the year, they seek programmers with 3 years' COBOL experience on any mechine for their major stock control systems UTILISING TOTAL database.

Plenty of new development work Plenty of new development work

PROGRAMMERS

Training in database
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 Sports and social club in beautiful grounds, heated swimming pool, squash club, etc.
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CONTRACT DIVISION



PROGRAMMER PL/I LONG CONTRACT PROJECT LOR PL/I FRENCH SPEAKING £480 p.w. £400 p.w. CEXCELLENT o.w. £330 p.w. £300 p.w. £400 p.w.

IMS PROGS COBOL POP HSXII FORTHAN SNR ANALYST DATABASE DESIGN 1HS 6700 COBOL PDP RSTS/E BASIC + ANALYST PROG IMS ICL COBOL GII DRIVER SNR PROD COBOL T.S.O. VSAM DOS VS C. LONDON DOS/VS COBOL TSO VSAM

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HERTS

worldwide, retaining IBM 370. Company seek programmer with minimum 18 months' COBOL /or PL/1 experience. They offer —

* Moves with programming into systems analysis of sales support to join one of their

specialist groups

Chance to move on to MINI computers

Located within easy reach of London

★ Relocation exponses
★ Salary £5,500

IBM PROGRAMMERS

Our client, an international pharmaceutical com Our client, an international pharmoceutical company, seaks programmers to join their rapidly expanding OP dept. They retain IBM 370 and require people with minimum of 12 months' COBOL experience, preferably under OS. Company offers excellent opportunities for movement into systems analysis, design and software support. Company offers — * Full training in TP and IMS Database

HERTS
One of the country's leading retail organisations seeks analyst programmers to work at team teader level on the development of new batch, interactive and distributed systems. Company currently retain Burroughs B3700/4700 series Hardware and are also investing in PDPII equipment. They seek porsons with 2 years' experience in design enalysis and/or programming (any language) to make a career with them.

Company offers:

* Universit opportunity to learn new languages and get on to MINI computers

* Significant user contact

* RELOCATION expenses

* Salary to £6, 160

★ Flexi hours Excellent technics for career development
 First-class perks which include sports and
 social club, subsidized restaurant, pension
 and sick schame
 Salary to 55,500

PROGRAMMERS

Management services division of major British group with annual turnover of almost £1000m seeks COBOL programmer with minimum 2 years' IBM or ICL COBOL within a project team. Programmers will become involved in program

design, goding teating, documentation and maintenance as well as assistance in systems implementation. Company offers:—

* Comprehensive range of applications

Opportunity to move to more advanced technical projects and a variety of languages and mechines
 Paid overtime — flext hours — subsidised

restaurant emongst many of the excellent

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REF, 1824

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COMPUTING AT CHRYSLER

Our modern Computer Centre at Whitley in Coventry serves the entire Chrysler Organisation in the United Kingdom

Equipment includes a twelve channel 4 megabyte Amdahl System 470/V6 machine and a 2 megabyte IBM 370/155 CPU with an AMS PSU feature, Both CPU's are linked to a wide variety of peripheral equipment including new 6250 BPI tape

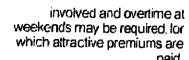
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Applicants should have at least 18 months operating experience on IBM equipment preferably 370's. Three shift working is involved and overtime at weekends may be required, for which attractive premiums

Operations Analysts Applicants should have at least 18 months operating experience in a large I.B.M.

and a sound knowledge of IBMUtilities and JCL. Three shift working is

Driving ahead in Europe



Project Support Personnel

Education to degree standard or A level required Applicants should have 3 years Data Processing experience Sound knowledge of IBM operating system. Utilities and JCL essential Knowledge of programming in COBOL or Assembler desirable.

Chrysler offers a high level of job satisfaction, good salaries and career prospects, and a pleasant working environment. Fringe benefits include contributory pension scheme with free life assurance,

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basic DP experience and have had at least three generous holiday entitlement years in the management of multi-site computer installations, preferably in the distribution and employee discount on business. Practical knowledge of control Company products. procedures and management information Please contact Mrs. A.E. Jones, Recruitment

Anyone under 30 years of age is unlikely to have the necessary experience to successfully undertake the duties of this post.

Conditions of employment are first class and include pension scheme, free life assurance and discount on all TI Group products.

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TI Bainbridge Silencers Ltd., is a member of the

£20m. It is the largest manufacturer and distributor of replacement vehicle exhausts in

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This is an important and challenging new post

He/she will have three subordinate staff. The

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two major facets of the job will be the co-

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For an informal discussion telephone 0204 71651 or please write with brief career

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Steel Tube Division

DEPARTMENT OF CHEMISTRY Research Assistant

to work on the solution of mathematical problems in chemical and enzyme kinetics.

Applicants should possess an Honours degree in Mathematics, Chemistry or Physics. Experience in computer programming will be a considerable advantage. The person appointed will be expected to register for a higher degree.

Appointment is initially for a period of 2 years.

Salary scale: £2,589 to £2,643 per unnum.

Application forms and further particulars from the Staff Officer, Portsmouth Polytechnic, Alexandra House, Museum Road, Portsmouth Pol 2QQ, to whom completed applications should be returned by 38th August, 1878.
Please quote Ref. D86,

QUEEN MARY COLLEGE

TEACHING UNIT Faculty of Engineering

Pacialty of Engliteering

Applications are invited for a 2 year appointment as MANAGER of the Lint. Candidates should be hondure graduates in Computer Science in graduates in Computer Science, Englishering or Science subjects with experience in programming and objecting resembly in relation to interactive multi-excess systems utilising graphical display, High-level tengungs uted are FORT/RAM and SASIC Dutter (return supervisor of the Unit, passet length as PDF-17/40 multi-scopes system and in collaboration discussion delegation of the Unit, passet length as PDF-17/40 multi-scopes system and in collaboration delegation of the Unit, passet length as PDF-17/40 multi-scopes system and in collaboration delegation in Englished and Institution of Institution delegation Englished and Institutional Science (PSI) (Mala) (A-134 SE) (SI) (Mala) (A-135 SE) (Mala) (Mala)

LEICESTER POLYTECHNIC SCHOOL OF ELECTRONIC & ELECTRICAL ENGINEERING

COMPUTER SYSTEMS **ENGINEER**

To supervise the devite, day operation of a disk based Date General Nova Minicomputer. In addition, the anginest will be required to develop hardware and selware for a variety of minicomputer and microprocessor systems.

A degree in Electronic or Electrical Engineering or Computer Science is narmally required for this post-factoristic or Computer herdware and software would be an adven-

Bully 64776-C5078 plus pay supplement of C518 of C520 p. a. Phops 8 review application on July 1978. Abellesten form and further de-tets avgillable from Stattling Officials "Jettesfar Folytached". P.J. Soc. 162 Jetset St.E. Bhu-rai Obsata 60 B. J. Jan. 2.101 Telephone: Crawley 0293 27777

PROGRAMMERS AND ANALYST Circa £2,000 to £5,500 negotiable

We are an established softwere house in commercial appl tions and require the following staff to work on visible recording the mini computers.

ANALYST — having one year's systems practice in addition to sound programming background. PROGRAMMER - having at least one year's progra

experience.

JUNIOR PROGRAMMER — naving up to one year's program ming experience.

BASIC PROG. Generous company bonofits are offered by vary sub-stential international service organisation to BASIC two or mure years on PDP 11 systems. ASSEMBLER PROG.

To £7K ASSEMBLER PROG. London This is a London based appointment but Initially the successful applicant will work expenses paid, for some months in Scullent completions. some months in Scotland completing a project there.
Two years experience and RSX 11 and MACRO 11

etilik ANALYST/PROG. N. Herts
This vacancy involves traison with users and other
departments of a professional organisation, Looking
for here vans assembler fixed SIANI page.

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HOLLAND

SENIOR PROGRAMMMERS £10,000

With experience in: COBOL modular programming DOS/VS CICS DL/1

> Send your career details to: The Personnel Officer Hunter Douglas Ltd. Walton-on-Thames

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Chief Programmer

Crawley, Sussex

A major international group scok an experienced person to fill this important computer vacancy at their Crawley Engineering Complex. The computer department supply a service to production, accounts, design and sales departments. DEC and Prime computers support 50 terminals in the offices and factory and in associated companies as well as Batch Processing services.

The successful applicant will supervise and schedule programming within the department and be responsible for establishing and supervising programming standards and disciplines. It is essential that the job holder has a sound education to degree standard, followed by six to ten years experience of data processing, part of which should have been in a supervisory capacity.

An attractive salary and relocation package, if applicable, is being offered.

For further details of the job, salary, and





TRAINEE PROGRAMMERS—having completed a university of idefinical college course in computer action.

Applications in writing stating full details of experience employer, age and salary to provide the programmer of the buildings. Brook Street, Governry.

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Up to £250 p.w. with E.M.S.

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PROGRAMMERS HONEYWELL L66—COBOL— ENTIRE U.K. PROGRAMMERS HONEYWELL IDS-NORTH-

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PROGRAMMERS—PL/1—LONDON AND SOUTH PROGRAMMERS—ASSEMBLER—MIDLANDS ANALYSTS AND PROGRAMMERS—LOCAL AUTHORITY EXPERIENCE—U.K.

PROGRAMMERS-COBOL BURROUGHS-****BOUTHAMPTON** OGRAMMERS-HONEYWELL

PROGRAMMERS-HONEYWELL COBOL-

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Packages to £7,500 & 0/T pay

The E.M.S. consulting group has a large quantity of vacancies for additional Analysis to handle expending systems requirements in the North West region. Candidates should have a minimum of 2 years' systems experience and preferably although not essentially, past programming experience. Our major current requirements are for both Analysts and Senior Analysts to work on commercial systems development. Projects will include Ledger Systems, Stock Control, Warehousing and Distribution. Chain Store Systems. Detabase and Natwork Systems. Ability to work in conjunction with client feam members and maintain a high professional standard will be important. Relocation assistance will be paid where appropriate. Telephone our Birmingham Data Centre urganity for early interviews on 021-454 7906 (Denis Filby/Don Philp). Please complets the attached application form in addition and return to Newcastle, Staffs-today. Over 20 current vacancies are available at vary attractive salary levels.

We currently have a large volume of vacancies throughout the Birmingham and West Midlands regions, including a wide variety of new jobs at the rapidly expanding E.M.S. Data Centre. COBOL and ASSEMBLER programmers should complete our application

color: and ASSEMBLEN programmers should complete our application forms today as an urgent priority. We have an unparalleled range of vacancies available. In addition to hundreds of client vacancies, E.M.S. also have interesting and challenging vacancies within our Turnkey Systems Division for candidates seeking the opportunities of constantly working on new development projects within a modern, attractively furnished Data Centre. Interviews are held deily at the Data Centre.—Why not come slong to descuss your career development projects within the Midlands E.M.S. exhaustication. your career development projects within the Midlands? E.M.S., as the largest recruitment consultancy in the country, has opportunities available for all D.P. staff which are unrivalled throughout the Midlands. Equally, please do not hastiste to complete and return today the attached application form. For only a few minutes initial correspondence the lucrative carear opportunities will be forthcoming for you make your time worth the investment Consultant Don Philp/Denis Filby.

TOP SALESMEN

E.M.S. is planning substantial further development of both our Consultancy and Turnkey Systems Divisions during the coming months. Our Consultancy sclivities extend across all maintrame ranges and encompass a wide range of industrial/commercial organisations. Applications must, therefore, present as high level Business' Analysis capable of, capitly essessing clients requirements and proposing relevant solutions where appropriate or consultance the relevant consultance experience regular in either systems or

ICK-20K (and it is carnable!!)

marketing Honeywell Level 6 mini-computer systems and supporting software to a wide range of U.K. users.

Experienced Salesmen ospable of developing their own territories are urgently required. A substantial quantity of leads are also supplied by extensive and vigorous advertising campaigns and Road Show ventures. Salesmen mulet possess an adequate mini-computer knowledge for Turnkey Systems positions. Care will be provided with adequate base sale-less and high programming and providing the necessary staff from E.M.S. resources. A vast programming and providing the necessary staff from E.M.S. resources. A vast prospective incentives. Apply by telephone for interview during the next week potential market exists for salesman marketing resource support.

Equally, our Turnkey Systems Division provided total U.K. coverage.

Consultant John Wood.

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Systems Support Engineers

High salary and excellent

prospects in Germany

TTEL'Is one of the world's largest suppliers of IBM - compatible maintrames, merketing and maintaining a wide range of products throughout the United States and Europe.

As a result of continuing expansion, we are now seeking two Systems
Support Engineers for our German operation - one to be based in Munich (who should speak German fluently) and the other to be based in Stuttgart (where German, though desirable, is not essential). Itel will help those who wish to learn German by providing assistance with both the time and cost of mittion.

provision of advice and guidance to I fel's dustomers regarding new operating system releases, new hardware announcements, and changes in hardware configurations. Planning and sales support will supplement debugging and general areas previously engineering.

The work is varied and in addition there is no risk of looling contact with the rapid advances being made in computer tachnology—tel ensures that all its staff are kept up to date with the latest developments by providing training facilities for that purpose.

Candidates should have experience with IBM large systems, 370/158 and upwards, plus a good knowledge of Internals. Knowledge of MVS, SVS, VM-or DOS/VS is desirable.

or DUSIVS is desirable.

Salary and benefits are generous - Itel can offer you a great deal. Why not give us a call, you've hothing to lose.

Send a C.V. or make a reverse drange telephone call in confidence to Chris Worrall - Itel Doutschland informations - Système GmbH, Euro-Haus Lyonerstrasse, 26, 6000 Frankfurt/Mein. West Germany. Tel: (611) 66891.

HONEYWELL ANALYSTS AND PROGRAMMERS

£5000 to £8000

EMS have a vast number of current vacancies throughout the UK, with large requirements throughout London. Home Counties and the North, to work as consulting support staff at established and now installations. Most of our fluttes incorporate development of new applications systems and assisting with the introduction of new Homeywall mainframes, or Lovel 6 mini computer systems, supporting our successful Turnkey Systems Division. Excellent salaries are available for all our Honoywell support staff working throughout the UK with opportunities for later involvement in American contracts if required. A minimum of 1 year's Honoywell experience is required with a wide range of opportunities throughout the group for all applicants. Please, urgently complete the attached application form and telephone initially our Birmingham Data Centre to arrange early UK interviews at a

CONSULTANT DAMIEN HANDSLIP

ANALYSTS, ANALYST/PROGRAMMERS

TO £8500

TO £5500

These attractive positions are for candidates with at least 3 years Data Processing experience interested in working as Support Consultants for a major international manufacturer. Duties will include assisting both in post sales conversion exercises throughout the London and Home Counties region, and for senior staff, occasional pre-sales leasibility studies. A working knowledge of COBOL programming on any machine will be advantageous. Full product taining will be given, with the opportunity to work on futuristic Real Time and Database projects occasionally. Excellent careor prospects exist with early progression based on results. The positions will be based to be advantaged.

CONSULTANT DON PHILP

PROGRAMMERS ---SCIENTIFIC SUSSEX TO £5250

Programmers are responsible for the design and programming of Engineering/Simulation applications using low level and high level languages. Simulators are controlled by PDP 11/46 mini computers operating in Real Time. A minimum of 1 year's Assembler experience in a scientific environment is report. ment is sought.

CONSULTANT CAROL PROUDMAN

PROGRAMMERS TO SENIOR ANALYSTS £3500-£5500

A large engineering group, located in attractive environmental surroundings, have a quantity of vacancies for all grades of staff at present. Producvacancies for all grades of staff at present. Production Control experience is a major advantage. A knowledge of COBOL for Programming vacancies will be preferred. Hardware is optional. Educational attainments should be 'A' levels as a minimum. Duties will incorporate Analysing and Designing specific parts of information Systems under the supervision of project leaders. Equally, you would specify write and install programmes necessary to achieve successful implementation, and assist with the cost eatimating of systems. Relocation assistance up to 2 months salary will be given where approup to 2 months salary will be given where appro-

Candidates must be experienced on ICL 2903 or 2904 equipment. RPG II programming proficiency is also sought. The machine runs payroll and ledger packages for a number of subsidiary companies. The successful candidate will be expected to maintain and enhance these particular systems. Ability to instantly identify and resolve any particular machine problems will be important, as will the ability to assess user requirements and to develop and install passes.

assess user requirements and to develop and install appropriate systems. The position will report directly to the Date Processing Memager.

EAST LONDON £4500-£5300

Bureau vacancies are currently outstanding for experienced commercial programmers to work on customer account support. Duties will incorporate programming to specifications produced by the Analysts and testing to the Analyst's aprialabition. Some guidance of trainees will be involved, leading eventually to supervisory duties. Quality conscious ness milest be maintained at all times in support servides to user clients.

CONSULTANT CAROL PROUDMAN

PROGRAM MERS

CONSULTANT JOHN WOOD

ICL 2900 SUPPORT

Printerly, these positions will involve supporting and maintaining all 2900 services provided by Reading Systems Centre and to provide technical support to Operations and Vasts of those services:

Operations and Useta of those services:

Capitida to will sheure that all services are supported to a level obliqueive to the sphievement of HSC objectives. Including out of hours support of sectives. Including out of hours support operaty, you will investigate evaluate fallures with a view to respiving them on site, or progressing them with the appropriate authority for the salidations sible resolution. Further extending lod are of lost one will be formered on request.

TECHNICIANS

CONSULTANT DON PHILE

READING

4 COBOL

CONSULTANT DON PHILP

ANALYST

KENT

PROGRAMMER

PROGRAMMING MANAGER

NOTTS

Preference will be for candidates with at least 5 years' programming experience, preferably with significant knowledge of the IBM 370 range working under OS. VS and UMS. PL/I, DL/I and 3790 are utilized. The unit uses a dual processor Date 100 RJE terminal with data validation and date proparation facilities connected to a contralized firmingham maintrame. The successful candidate will take. control of a team of 8 staff, due to expand to 12, and will provide user services both for new applications and maintenance of existing facilities. The post will report directly to the Data Processing Manager.

CONSULTANT DON PHILP

ANALYSTS AND **PROGRAMMERS** GLASGOW

£3500-£5000 PLUS BONUS

All condidates should have a reasonable working knowledge of ICL herdware and COSOL programming. The client currently lies an ICL 2904 and uses the 7502 concentrators in a Cookins environment. Outles include development of on-line systems investigation of user requirements and systems design, through to programme development and testing, in addition to salaries stated, the company bas a self-linancing quarrerly productivity bases. CONSULTANT JOHN WOOR WITH THE

PROGRAMMING MANAGER STAFFS

c £6500

Experience of IBM 370 PL/1 and Assembler will be assential working under OS/VSI using CICB Equally, we seek candidates with some experience of modular programming and a working knowledge of systems programming. The section currently figs: 12 programmers who will report to the Programming Manager. This position in firm reports directly to the Oats Processing Manager. The clients are a major industrial group.

CONSULTANT DON PHILP

TIMESHARING WANAGER

STAFFS AND BIRMINGHAM

Negotiable and profit sharing

EMS are currently developing a Timesharing Division, with Supporting Packages, or custom built systems as required, operating on an ICL 2904, and later, utilizing also Honeywoll machines expandable to 2 Megabyles We require at this point, an experienced Operations / Programming Manager interested in helping build a division from initial conception towards a high annual turnover level. Client negotiations are already proceeding towards the capture of a small number of large prospective accounts to fully utilize the existing equipment to its total expansion level. Ideally, candidates will have a sound knowledge of ICL hardware, preferably also ICL 2804 series, although conversion training would be given to otherwise suitable applicants. Comms. knowledge will be essential as will the ability to programme in COBOL.

ICL 7502 facilities are directly linked to our Birmingham Data Centre with this unit requiring constant support from the Newcastle-under-Lyme machine.

Further 7502 systems will be linked throughout the Midlands and North following marketing activities in hand at present. Knowledge of packages would be an additional asset, but not essential. Most important is that candidates have the willingness and motivation to assist a new venture sterting on a small scale at present. schieve a successful market growth and in turn share enhanced career prospects from the success of the

An attractive salary will be negotiated according to the relevant experience of each candidate, with further banefits for future assessment when profitability is reached as a new operating division within the group, North Staffordshire offers attractive low cost housing, with good amenities. Relocation assistance will be provided where appropriate. Please complete the attached application form in the first instance and return to JOHN WOOD, GROUP MANAGING DIRECTOR.

ANALYSYS AND **PROGRAMMERS**

CONSULTANT JOHN WOOD

EAST LONDON TO £6500

A commodity trading group using IBM 370's under Power VS, with Shadow as TP monitor to New York require numerous extra staff to assist with new developments. Analysts should be aged 20 to 25 and have a minimum 18 months-2 years' exparlence. He will work directly with the Data Processing Manager. Programmers should have at least 1 year's PL/I experience and will be given the opportunity to tearn other languages as appropriate. A contributory Private Pension Scheme exists, in addition to other fringe benefits. Future mortgage loans are available in appropriate cases. Programmers will be given basic aptitude tests during the

SENIOR ANALYSTS **EAST LONDON** c £6500

A major bureau group have urgent requirements for experienced Senior Analysts. Duties include systems specifications, systems design and some support during pre-sales activities. Ability to liaise with users, support programmers and operators will be impor-ant. Equally, ability to co-ordinate projects will be sought, including Planning, especially during lementation. The positions involve a high degree of user contact. CONSULTANT JOHN WOOD

PROGRAMMERS TO SYSTEMS CONSULTANTS **LONDON** £5000-£8000

A software house operating from SW London have numerous vacancies for staff to work both on new systems and maintaining current systems. Hardware preference will be fot both ICL 1900 and IBM 360/370 series. Periods of travel both throughout the UK and overseas will be necessitated. Candidates must have the ability to communicate effectively at all levels of management. CONSULTANT DON PHILP

COBOL PL/I AND ASSEMBLER PROGRAMMERS LONDON AND UK

EMS are inundated with thousands of current vacancies for young programmers with 1 to 4 years' experience irrespective of UK location, programmers interested in a move enywhere throughout the UK, are guaranteed so many potential interviews you won't be able to cope with the response. EMS place over 85% of all candidates within this category within the first week of approach. Most UK Date Processing Managers use EMS as the only really viable recruitment consultancy to schlave positive early results. So, if it's a good new career move you're speking, with the best financial rewards valiable, complete the EMS career form attached and just watch the results. We guarantee you'll be joining the thousands of other, satisfied users each year. CONSULTANTS DON PHILP CAROL PROUDMAN SUE ADAMS

ANALYSTS

LONDON, HOME COUNTIES AND UK IN GENERAL

EMS receive hundreds of vacancies each week from companies urgently seeking experienced Analysts to work in a wide variety of roles from juniors to Systems Managers. Vacancies are too numerous to advertise. EMS guarantee, that for appropriately experienced and qualified Analysts, you'll be inundated with interview requirements within a week of applying to us. There's no facility to match the EMS service nationwide. requirements within a week of applying to us. There's no facility to match the EMS service nationwide, a consultancy reaching every installation in the country for requirements weekly. Even the publications have not applying the started to the publication of the structure of the country for requirements weekly. Even the publications have not applying the structure of the country for the country for the country for the country for the country of the country for the country f

CONSULTANTS DON PHILP JOHN WOOD CAROL PROUDMAN

IBM OPS SUPERVISORS

KUWAIT

Projects Completed

£4500-£7000

Experienced IBM Op. Managers and supervisors capable of taking a supervisory role in Kuwait installations and training Arab nationalists are urgently required for major naw opportunities with interviews to be held in London from the 20th of August onwards. Knowledge of CS and RJE will be advantageous although suitably experienced DOS candidate, will also be considered. Distinct preprience will be given for single people or married couples with no philoten. Children will be a major phajacle for these particular vacancies due to restricted family accommodation being evallable. Excellent prospects exist to save significant sums of money with additional attractive job.

EMS CONSULTANTIA ID: 61 LOWER STREET NEWCASTLE UNDER COME

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Manager and Company of the Telephone 10/8/26/2005, 4, 7/3 Third or reduced about

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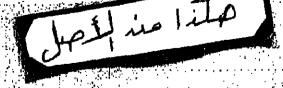
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it pays to be better:



recruiting marketing ana-future of a company by lysts and one of the creating and satisfying a apparently simple questions demand for the products we asked was: "What is within its capability, thus marketing?" The answers generating we got were wide and employment aried. employees and profits for Many saw it as a discrete expansion and future deve-

activity closely related to lopment, as well as satis-public relations, advertising lying its investors. An and market research, while some gave the impression measure. they thought it was a way of avoiding the use of that within the computer in-

marketing. For some, marketing is an essential function; to others it is a total void.

Intersitation to be in, but what about tomorrow? Empty factories? It has happened before.

Complacency is a close

the creation of a product, copy in order to ensure suc-making it available where cess. In a fast expanding and when it is required, en-suring it is both competitive come another 1971 and and profitable and infor-those companies that have their 4P wrong run a severe ming potential buyers that their 4P wrong run a severe it will satisfy their needs. risk of going to the wall. Any department involved in any of these activities must

interact with the compre-hensive function of marketing: Research Production Publicity Finance teachers Personnel

Client Support

Because of its necessarily broad interests, marketing Details given with each is often regarded with sus- item include the price, a is often regarded with suspicion by people in other departments. Marketing address of the distributor.

The catalogue covers books, wall charts, simulated games, logic tutors, entities providing at best an intangible benefit. Such parencies, teaching package reaction is unfortunate ages. films sildes film

any organisation must be branches and of branches of naved to abdicate so: of its sovereignty in order to group. maximise the chances of

industry is for the most part a gesture. It is often a refuge for "failed salesmen"; a collective term for the peripheral activities of seling that salesmen don't have the time to do. A bit of public relations here, a bit of advertising there (just to spend the rest of the budget!), producing a few brochures, and so on basically a waste of time and money which makes

important function by any nasty word — selling! dustry have no marketing operation at all, even on the diverse ways in which companies within the computer industry organise me, "We don't need mar-their sales and marketing keting; our problem is organisations to see that there are many different opinions concerning the well, in some ways that's a purpose and importance of nice situation to be in, but

void. Complacency is a close
There are many definicompanion of success tions of the word mar- which makes it very temketing. My own company uses the abbreviation 4P.

The right Product

T The right Product
In the right Place
At the right Promotion
A gross simplification, perhaps, but it is only intended to describe the function of marketing. One must then consider all those aspects of a company's operation which have a direct or indirect effect on the creation of a product,
Under the influence of the "annual budget syndrome." Many products within the computer industry are actually an emulation of some other company's success, or a development on the basis of "Me Too" technology, which assumes that if one company has created a demand, all that has to be done is to produce a cheaper copy in order to ensure success.

i.e. the whole organisa- wall charts, films and other tion, to all intents and pur- aids for school teachers has

nreaction is unfortunate, ages, films, sildes, film but not uncommon, loops, video programmes but not uncommon. loops, video programmes
Yet if marketing is to play and periodicals. There are
an effective projection also lists of addresses of
management throughout examination boards, of BCS

their company's future survival within the market-place...

Unfortunately, marketing within the computer Educational Alds and Resources for Teachers, 30 pp. 96p and 10p for postage. National Committee for Audio-Visual Aids, 33 Queen Anne Street, London W1M OAL.

Puzzle answer

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marketing in the context of Marketing is an essential

little or no contribution to

Real-Time Systems/ Programming Those of the state of the

Mini-based real-time projects

West London

t analysis/ design

Overseas travel opportunities

Generous benefits

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Hertfordshire

in developing, installing and maintaining:

* on-line systems using BASIC +

米 timesharing systems using APL

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Block 10 (Block Contains 2 Characters)

Hex and Zap are still up in their secret hideout in the Sierra Nueva, waiting for Cleo and Lambda; but there is no sign of

THEY spent the first day clearing rubble out of the entrance tunnel and generally tidying up. It was thirsty work. The water in the little lake, which had been so intensely blue and cold, was now clouded and. Hex noticed. tepid; but it was all they had to drink.

Next they set about trimming their access overheads by purging temporary files. Being androids, and therefore accustomed to having a distributed database to back them up, they were worried about the long-term ill-effects of data deprivation. They had heard frightening stories of what might happen to androids isolated from the Network. Hallucination, psychosis and even parity failure had been

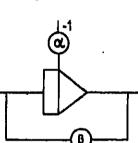
They discussed various possible solutions, and decided that the best stopgap would be to modify the micro that Dr Null had given Hex on his deathbed to act as stand-alone back-to-front-end processor responsible for organising their offline storage, and Lambda's when she arrived.

Zap had thoughtfully brought a bag of assorted chips when he fled the research station, and he was soon happily immersed with Hex's soldering iron in the delicate business of TTL knitting, otherwise known as logical circuit design. Hex left that side of it in his capable hands and began thinking about the software. Since the essential medium for eliable system design (the back of an old envelope) was lacking on this occasion, he made do with the ragged scrap of paper that Dr Null had called his blueprint for an anti-data device.

Half-way through, out of curlosity, he turned it over. It looked too simple to be of any

He showed it to Zap. "What do you make of

'it looks like an old analogue liagram. What's it supposed Dr Null claimed it was a





black noise generator, capable of obliterating data patterns by feeding back a negated image."

Zap turned the paper upside down and squinted at it.

"No," he said, "It's only an exponential decay function. He hasn't even done the scaling. Might as well tear it up." He

With that he returned to his soldering. Hex shared his scepticism, but decided to keep it nevertheless until he had a more convincing explanation of what it did. He tried to get on with his system specification, but there was something on his mind.

"Zap," he asked, "What made you join us and betray the States?"

Zap looked up. "We really had no choice. Once you and Cleo had called on Lambda she either had to turn you in straight away or throw in her lot with the other side; you can't keep secrets from the Network. And once she had made up her mind, my course was obvious too." Then he shrugged. "Besides, a being of my telent — it had to happen some day. I'm an instruction-set artist. When I started they needed people like me. Programs were hand-coded in those days. Now it's just a question of sticking together a couple of off-the-shelf modules and away you go — no creativity.

involved, It's the same with hardware too. The System can't make use of my kind any more. I used to have responsibility

for major projects; but I had hit a dead end."
"I see. No job satisfaction."
"Yeah. That's why I have a few good words for James."

Hock and his mangy old text-retrieval system. He's totally incompetent of course, and his program's more full of bugs than a maggot's nest, but at least he tries. He's been up and down the country trying to hawk it to anyone who'll listen. "But it doesn't work, eh?"
"Actually, that's not the point. You or I could make it go in two minutes flat. The reason no self-respecting installa-

tion will touch it is that it is hand-made. It was designed and coded by one person. It doesn't conform to the guidelines laid down on standards. It uses unorthodox control structures. It's too messy to be maintained automatically. Above

all, it's not plug-compatible."

Hex thought about this, then looked down at his own scribbled joitings. To him it represented a transactionprocessing monitor in embryo, to anyone else it would be an indecipherable scrawl. "Well if you like unstructured software, I guess you'll approve of mine."

Zap laughed.
Through the first day, these activities kept them occupied, but as night approached they became increasingly worried about the fate of Cleo and Lambda. When it was dark they sent Ascil to guard the tunnel entrance and sat in the cave.

"What do we do if they don't turn up?" Hex asked. "I don't know."

"We can't stay here for ever."

"We certainly can't. We have about five days before the System catches up with us."

"Why so soon? They think they bombed me out of existence here. And if they know I'm on the loose again that will make them mistrust whatever extrapolation function they used to locate me."

"I wouldn't bank on it. They're very thorough, and they have a lot more processing power than we have. If you want to be rational about it, our position is hopeless. All we can do is make some kind of impact before we are wiped

"I don't want to be rational about it, then."

"Have it your own way. But you know the System as well as I do. Two or three androids are unlikely to cause its

"There must be a way," said Hex, though he couldn't

Their talk petered out. They did get some sleep, but not much. Before dawn Hex was up and crawling to Ascil's sentry post. When he poked his head out, he received a shock. He ran back down the tunnel. "Zapi" he shouted, "Ascil's gone."

What will become or our heroes and heroines now? Wait and

v 1978, Richard Forsyth, RAIR Timesharing

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